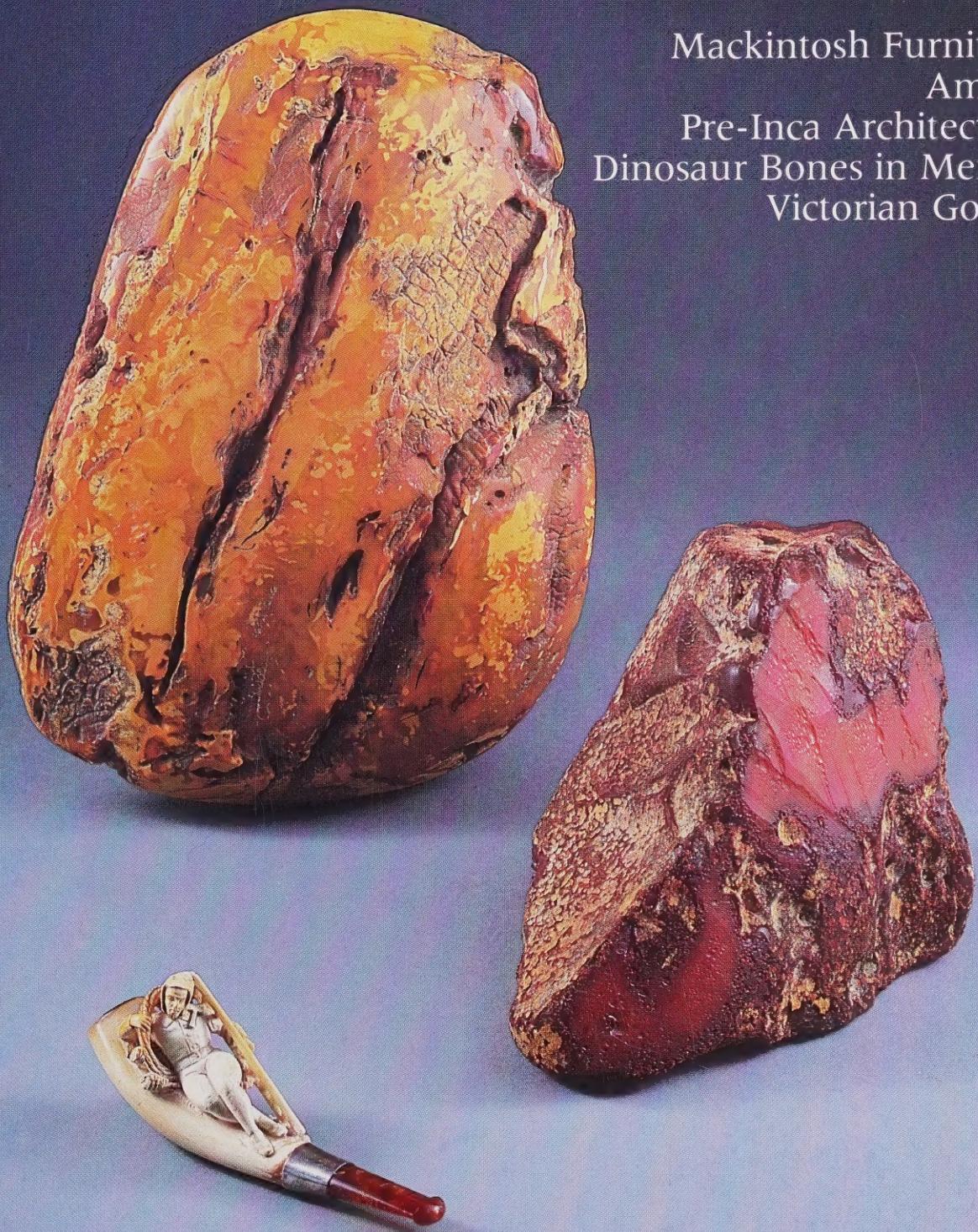


Spring 1985 Vol. 17/no. 4

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ROTUNDA

the magazine of the Royal Ontario Museum



Mackintosh Furniture
Amber
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ROTUNDA

the magazine of the Royal Ontario Museum

Volume 17, Number 4, Spring 1985

Mackintosh Furniture at the ROM: A unique acquisition

Thomas Howarth

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Marcahuamachuco: Dynastic architecture before the Inca

H. Stanley Loten

21

Dinosaur Bones in the Chihuahua Desert: A new field of exploration

Gordon Edmund

35

Victorian London and the Gothic Revival: Some highlights

K. Corey Keeble

40

The Growing Collections

51

Recent and Forthcoming Publications

55

Book Reviews

56

Index

64

Cover: A pipe (12.5 cm long) with an amber mouthpiece and a meerschaum bowl carved in the shape of a chimney-sweep is shown with two large lumps of Baltic amber. Story on page 11. Photo by Bill Robertson, ROM.

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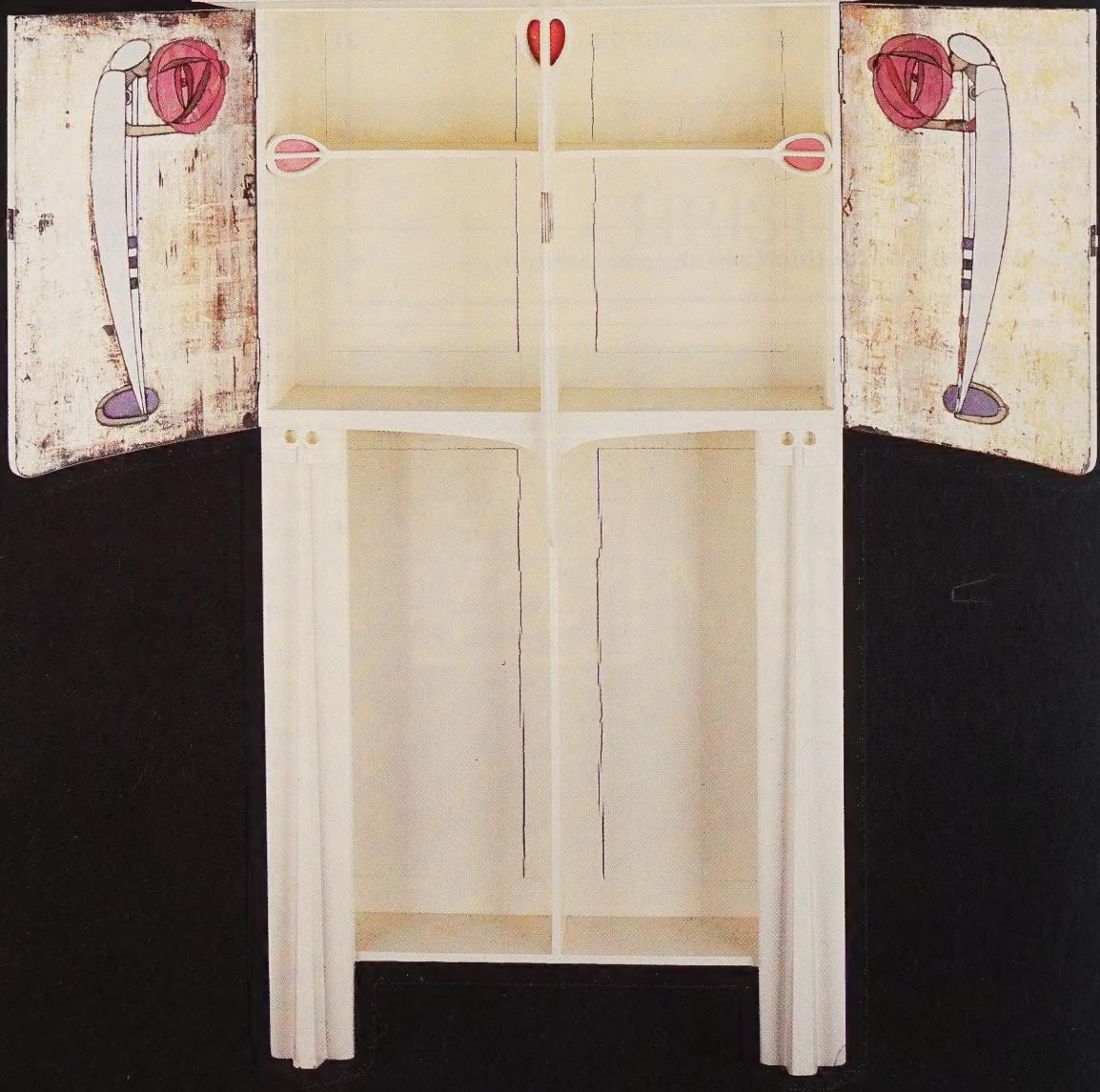
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Thomas Howarth

Mackintosh Furniture at the ROM

A unique acquisition



FIVE pieces of furniture designed and made by Charles Mackintosh have recently been purchased by the Royal Ontario Museum and are now being displayed in a temporary setting in the gallery entitled "From the Collections". They represent an acquisition of unusual interest.

Charles Rennie Mackintosh, architect, interior designer, and watercolourist was born in Glasgow, Scotland, in 1868: he died in London in 1928. The second son of a family of eleven children, he was determined from an early age to be an architect and after high school he was apprenticed to local practitioners, supplementing his office work by evening classes at the Glasgow School of Art.

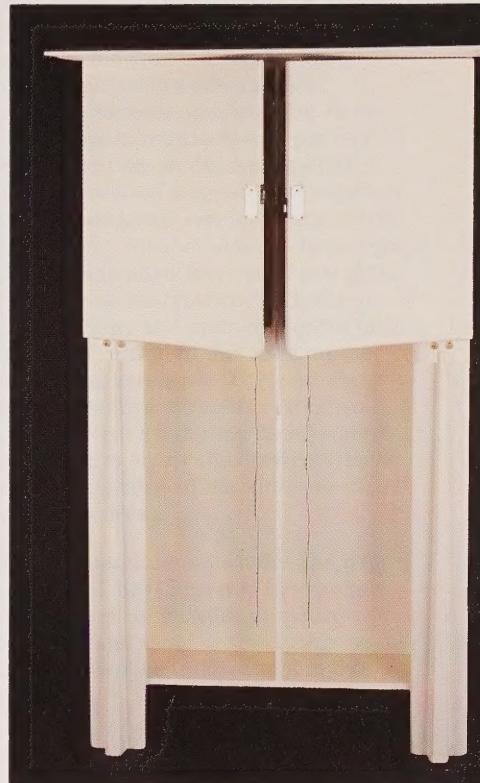
During the early 1890s, in collaboration with his friend and colleague, J. Herbert MacNair, and two sisters, Margaret and Frances Macdonald, all of whom were students at the school, Mackintosh began to produce strange and unfamiliar watercolours and graphics of either richly symbolic or abstract form. This work, and the elongated, conventionalized female figures affected by "The Four" and reproduced in beaten metal, gesso panels, posters, and other materials, attracted a great deal of attention and were identified internationally as the "Glasgow Style".

From such experimental beginnings in the graphic arts, crafts, and furniture design, Mackintosh's architectural style moved gradually away from the conventional eclecticism of his contemporaries. His great opportunity came in 1896 when, on behalf of the firm of Honeyman & Keppie, he won the competition for the design for the new Glasgow School of Art. The school was built in two parts: the eastern half between 1897 and 1899, the western half, with its magnificent library redesigned in 1906, between 1907 and 1909. This building is now recognized as Mackintosh's masterpiece and is an important milestone in the development of modern architecture. Also in 1896, Mackintosh obtained the first of his commissions for the design and furnishing of Miss Catherine Cranston's famous tea rooms, projects he worked on for some twenty-five years.

In keeping with the best traditions of the architectural profession, Mackintosh designed everything that went onto or into his buildings, from wrought-iron railings and sculpture to carpets, curtains, and cutlery. But all his work bore the unmistakable stamp of his creative genius. Every detail was carefully thought out, and the parts, whether utilitarian or aesthetic, were meticulously related to the whole. A European visitor, E. B. Kalas, experiencing one of Mackintosh's white rooms for the first time spoke of its "virginal beauty" and of Mackintosh and his wife Margaret Macdonald, as "two visionary souls in ecstatic communion wafted aloft to the heavenly regions of creation". This panegyric, written in the flamboyant style of the period, may sound absurd to our ears, but anyone visiting the recently reconstructed interiors of the Mackintoshes' house at the Hunterian Museum in the University of Glasgow will find the white drawingroom as breathtakingly exquisite as did Kalas at the turn of the century.

Mackintosh was a prodigious worker and produced all his best work during a single decade (1896–1906). This included the Glasgow School of Art; the residences "Windyhill" (1899–1900), and "Hill House" (1903–4); the four Cranston tearooms culminating in the "The Willow" (1903–5); unrealized projects for the Glasgow Exhibition of 1901 and for Liverpool's Anglican cathedral (1903); and some four hundred designs for chairs. He had a profound influence on the development of the modern movement in Central Europe, particularly in Vienna, where he exhibited first in 1900, and was hailed as one of the truly original, creative designers of the day: "Mackintosh, the greatest since the Gothic", as one admirer described him.

In the light of all this, the significance of the five pieces of furniture acquired by the ROM can be better appreciated. The white cabinet designed in 1902 for Mrs Jessie Rowat and the bedroom suite made for Miss Catherine Cranston in 1904 belong to the architect's best period and indicate clearly his concern for simplicity, elegance, good form, and proportion. They demonstrate his infinite care over detail—the placing of accents of colour and of contrasting materials, such as leaded glass, ebony, and mother of pearl, and the play of light and



White cabinet, 1902, one of a pair, designed for Mrs Rowat, 14 Kingsborough Gardens, Glasgow. The austere exterior is relieved by the gentle curves of the doors and centre support, the modest sculptured elements, rather like owls' faces, at the top of each front leg, and the silvered lock plates. Two silver drop handles have unfortunately been lost. The splendidly exotic interior (see facing page) with its silvered doors, coloured glass inlay, and three small, beautifully modelled carvings with rose-coloured ceramic inlay, forms a striking contrast to the exterior. Mackintosh intended the pair of cabinets to be placed side by side with their doors open. This piece has been restored, but the silver finish in the doors has deteriorated and some pieces of glass have been lost from the inlay. Shrinkage-cracks are conspicuous in the back panels, caused, no doubt, by the effects of domestic central heating and the Canadian climate.

Photography by Bill Robertson, ROM

shade, as in the interlaced stretchers below the commode. The present temporary display in a spacious gallery furnished with traditional showcases and suits of armour does not do justice to these important pieces, which demand a much more intimate setting; but this deficiency will be remedied when a permanent location is determined.

The story of the acquisition of the five pieces in May 1984, with the aid of a Federal Government grant of more than \$400,000, is of particular interest. In the year 1900 Catherine Cranston with her husband Major Cochrane, purchased "Hous'hill", a large old residence in Nitshill, Glasgow. Miss Cranston had been one of Mackintosh's first patrons and most loyal supporters, and naturally he was commissioned to design and furnish the principal rooms at "Hous'hill";



The wash-stand, a most elegant and simply constructed piece, demonstrates Mackintosh's concern for practical use. The doors fold inwards and the mirrored top folds down to create a clean, rectilinear look. Apart from a slight curve at each end of the drawer frame, twin ovoidal-shaped shelves, and heart-shaped brackets to the towel rails, all decorative elements are square or oblong. There are subtle variations in the lead and glass checkered patterns: the two at the back penetrate right through the panel and are of blue and white glass; those at the side are pink and white and are recessed, not cut through. The blue squares in the drawer are of glass backed with a thin metal plate; the recess housing them is shaped for the fingers to serve as a drawer-pull. The two doors each had a handle of ebony inlaid with mother-of-pearl, but one of them is missing.



these included the music room, billiards room, and several bedrooms, one of which was known as the White Bedroom. Most of this work was executed between 1903 and 1905.

Major Cochrane died in 1917, and about three years later Miss Cranston sold "Hous'hill" and its furniture and took an apartment in a city hotel. The new owner moved out in 1933, and the contents of the house were auctioned on 18 August of that year. The auctioneers had difficulty in obtaining bids for many of the pieces, and Mackintosh chairs of fine craftsmanship were sold, usually to the designer's friends, for £2 to £3 each, and several cabinets for £5 to £6 each.

This dressing-table/commode is an extraordinary piece. Mackintosh frequently designed tall, free-standing cheval mirrors, but in this instance, probably for economic reasons, he designed one in miniature and placed it as a separate unit on the dressing-table. The mirror itself is square and is carried in a tall, elegantly tapered frame, which rises from a small miniature chest of six drawers intended for jewelry and other feminine accoutrements. Each drawer has an ebony and mother-of-pearl pull, a smaller version of that used on the supporting commode. These are the only decorative elements in the two pieces except for the interlaced pattern of stretchers below the drawers which create forty-nine of Mackintosh's ubiquitous squares.

The ROM acquisition includes also a four-poster bed, not illustrated here because it is incomplete without its mattress, overlays, and stencilled silk hangings, all of which will be restored to it in due course.

In this context it is astonishing to note that, at Margaret Macdonald's death in 1933, the contents of the Mackintoshes' studios in Chelsea, London—furniture, drawings, paintings, fabric designs, and other items—were valued at £88.16s.2d! "Hous'hill" was seriously damaged by fire in the 1930s and was bought and demolished by Glasgow Corporation.

Four of the five pieces now at the ROM came from the White Bedroom at "Hous'hill"; the fifth, the white cabinet designed for Mrs Jessie Rowat of Glasgow, was one of the pair copied later by Mackintosh for his own use. The five pieces were bought by Dr and Mrs Theodore Day Bain of Glasgow. Mrs Bain had been born in Toronto in 1902 and was married to Dr Bain in Hart House chapel some twenty years later. The Bains went to live in Scotland in 1927, but returned to Canada in 1936 bringing the Mackintosh furniture with them among their household effects. They settled in Vancouver.

It has not been possible to determine the precise circumstances of the Bains' purchase of the furniture, but in all probability it was acquired at one or other of the several auctions held in Glasgow in the 1920s and 1930s, at which Mackintosh work occasionally appeared. None of these pieces was included in the well-documented Mackintosh Memorial Exhibition and sale of May 1933.

In 1981 Mrs Bain's sister, Mrs E. Mildred Temple, was holidaying with cousins in England. During her stay a christening robe that had been offered to Sotheby's of London was returned, and thus, by coincidence, Mrs Temple obtained the address of this famous auction house. Later, with Mrs Bain's consent, she informed Sotheby's of the whereabouts of the furniture, all trace of which had been lost for nearly fifty years.

Correspondence with Sotheby's began in the summer of 1981 and culminated in November 1983, when a senior member of the firm went to Vancouver and was convinced that this was indeed authentic furniture from "Hous'hill", hitherto presumed to have been destroyed by fire or dispersed by auction. Mrs Bain was persuaded to offer all five pieces for sale at Monte Carlo, one of the firm's most prestigious locations. In the meantime the furniture was sent to Glasgow privately to be restored by a company specializing in such work; eventually it was beautifully illustrated in Sotheby's catalogue of the proposed sale at Monte Carlo on 9 October 1983.

In September 1983 Rita Rief, a columnist with the *New York Times*, writing under the heading *Antiques View*, had drawn attention to the importance of the sale in an article entitled "When Architects Design Furniture".

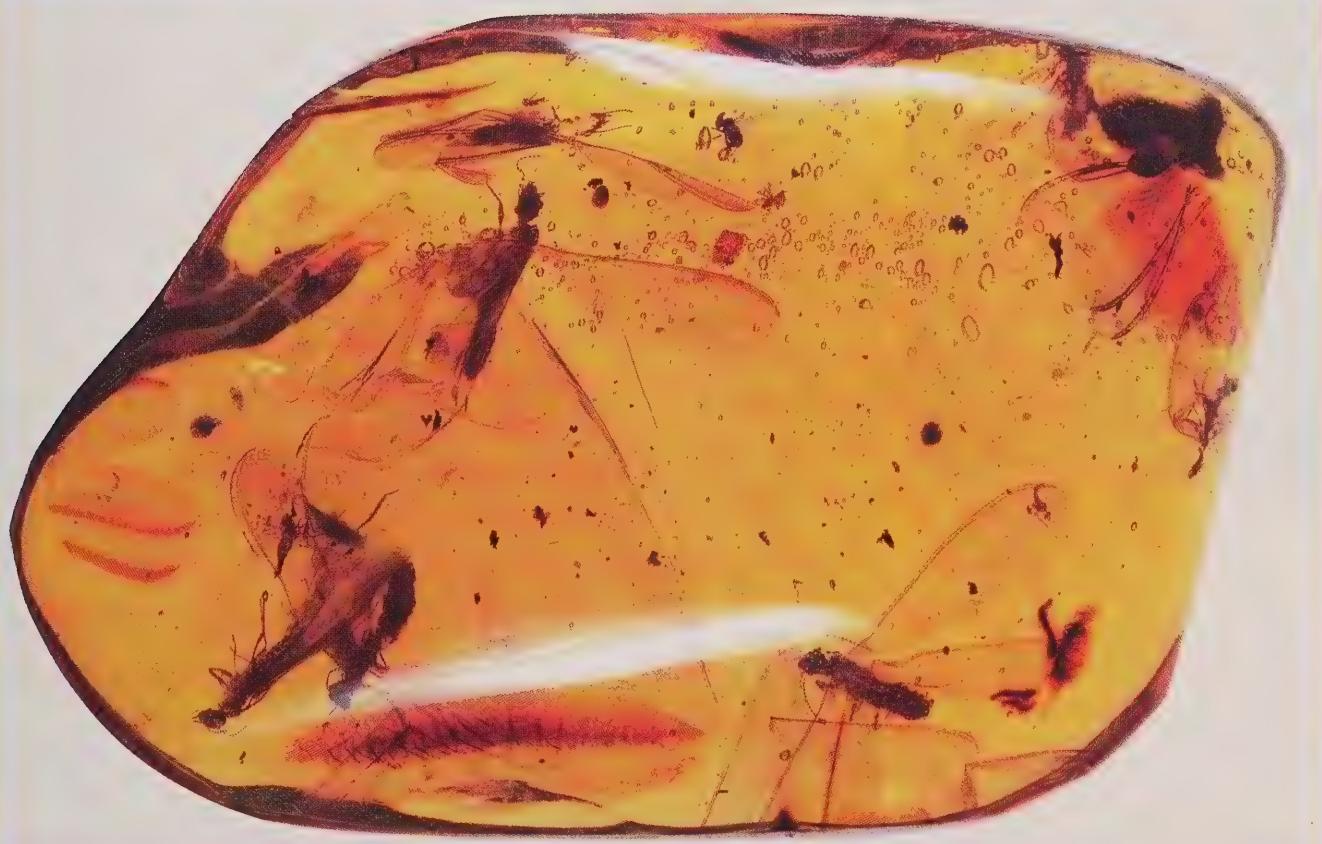
All this international publicity, together with the revelation of the Canadian provenance, attracted the attention of Canada's Cultural Property Export Review Board. Since the Mackintosh furniture had been in Vancouver for more than fifty years, the board claimed that under the Act it was part of Canada's cultural heritage and could not be sold overseas without an export licence. Though Mrs Bain and Mrs Temple travelled to Monte Carlo from Canada hoping to enjoy the excitement of the bidding, the sale was stopped at Ottawa's request. While it could be argued that Scots rather than Canadians should have prior claim to Mackintosh's work, the regulations of the Act are quite specific. At an official hearing by the board on 12 December 1983 Sotheby's appeal against the decision to refuse an export permit was disallowed and Canada's legal rights were confirmed. The author of this article and Mr K. Corey Keeble of the ROM were invited to the hearing as expert witnesses.

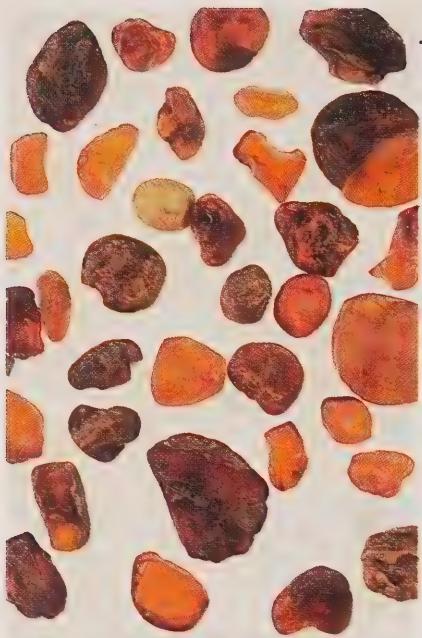
Subsequently, Mrs Bain agreed to accept the outcome of an official valuation, and with the generous cooperation of Sotheby's the furniture was returned to Canada. The agreed price was more than \$600,000 for the five pieces. The Federal Government met about eighty per cent of the cost, and the ROM provided the balance and obtained the furniture. Incidentally, this was the first time that any Canadian museum had even made an offer for, let alone acquired, furniture by this internationally important designer, and those responsible for the imaginative purchase are to be congratulated. It is hoped that this valuable acquisition will serve as a nucleus around which will be built a permanent exhibition of 20th-century European and North American interior design and furniture.

Dr Thomas Howarth, Professor Emeritus, University of Toronto, is an architect, campus planner, and interior design consultant. He began research on Mackintosh and his contemporaries in 1940 in Glasgow and is the author of the definitive biography Charles Rennie Mackintosh and the Modern Movement (Routledge, London, 1952 and 1977).

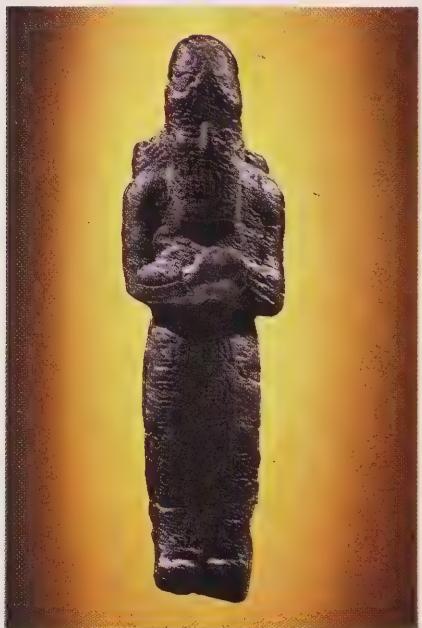
Janet Waddington

AMBER GOLDEN LEGACY OF TIME





Naturally polished beach pebbles of amber from Cedar Lake, Manitoba, display the material's wide range of colour, texture, and transparency. The pebbles average about one centimetre in diameter.



Neo-Assyrian amber statuette, from Mesopotamia, of a male deity wearing a patterned garment. From the Lands of the Bible Archaeological Foundation's collections housed in the West Asian Department of the ROM.

The illustration on page 11 shows several crane flies preserved in clear Dominican amber.

Photography by Bill Robertson, ROM

LONG ago, when the Greek gods were young, the sun god Helios drove his flaming chariot daily across the sky to light the world. Phaethon, his son, longed for a chance to guide the sun, and finally, with his father's reluctant consent, he set off one morning in the fiery chariot. Frightened by an inexperienced hand on the reins, the horses bolted, drawing the sun high into the heavens and then down perilously close to the earth, while Phaethon clung terrified, powerless to stop them. At last Zeus, king of the gods, struck Phaethon with a thunderbolt, throwing him into the Eridanus River, where he drowned, and driving the sun back up into the sky. Phaethon's sisters, the Heliades, wept bitterly at the loss of their brother. In pity, the gods changed them to poplar trees, rooted to the bank of the river. There they continued to weep, and their tears, hardened in the sun, fell to the ground as amber.

The romantic Greek myth preserves an element of the truth in explaining the origins of amber. Amber is fossilized tree resin, although the trees were probably not poplars. Although its name is associated with a characteristic golden colour, amber ranges in colour from white, through shades of yellow and brown, to dark red or almost black, sometimes with a greenish or bluish tint. It may be crystal clear, cloudy, or darkly opaque. Most amber fluoresces with a whitish yellow or green glow in ultraviolet light. A few varieties are slightly fluorescent in ordinary reflected light.

Since amber is considered a semi-precious stone, its physical properties may be described in mineralogical terms. Being a poor conductor of heat, it is warm to the touch, unlike many gemstones. Also unlike other gemstones, amber is soft. On the Moh's hardness scale of 1 to 10 it measures about 2 to 2.5—about the same as a fingernail. This means that, though most amber cannot be scratched by a fingernail, it can be scratched by a copper penny (hardness 3) and carved with a knife (hardness 5.5). Though soft, amber is quite brittle; when carved it tends to produce a powder rather than shavings. Its hardness and sectility seem to increase with age. Like other amorphous substances, amber breaks with a conchoidal fracture, the broken surface appearing somewhat like that of broken glass. Amber's refractive index—a measure of how much a beam of light is deflected when entering a substance from air—is about 1.54, similar to that of glass. Its specific gravity varies from 1.05 to 1.1, just slightly more than that of sea water.

When rubbed briskly with fur or velvet, amber gives off a faint pine odour and becomes highly charged with negative electricity, so that it will pick up small pieces of paper or straw. It was from this property of amber (*electron* in Greek), first described by Thales of Miletos in 600 B.C., that electricity was named. The Arabic name for amber, *kah-ruba* or "straw robber", also acknowledges its electrical properties.

The chemical composition of amber is approximately $C_{10}H_{16}O$, with varying amounts of sulphur. When heated, it softens and swells at about 150° to 180° Celsius, and decomposes at about 280° , producing, among other substances, oil of amber and varying amounts of succinic acid (Latin: *succinum*—amber) and hydrogen sulphide. Amber has been broadly categorized into succinates (containing succinic acid) and retinites (lacking it).

Man's association with amber, recorded in tombs and ancient literature, goes back to the dawn of civilization. The ancient Celts, in Neolithic times, used amber in their sun-worship and named their sun-father Ambres. Cups made of amber are found in tombs of the British Wessex culture (16th century B.C.). Homer described a king's palace resplendent with copper, gold, amber, ivory, and silver, and a gift to Penelope, wife of Odysseus, of a necklace of amber and gold like the sun. Shaft graves of Mycenaean Greece (16th century B.C.) contained huge caches of amber ornaments. Both Herodotus and Theophrastes made reference to the sources of amber trade to the north. Peter the Great of Russia had a room lined with intricately carved panels of solid amber in his summer palace at Tsarskoye Selo, near present-day Leningrad. The room was dismantled by the Nazis in 1941 and has since disappeared.

The collections of the Lands of the Bible Archaeological Foundation, housed in the ROM's West Asian Department, contain an extraordinary amber statuette,

28 cm tall, catalogued as a Neo-Assyrian figure of a "male deity wearing a patterned garment", from Mesopotamia. Chemical analysis suggests that the amber originated in Lebanon. A similar figure, of Baltic amber, resides in the Boston Museum of Fine Arts. Such large amber artifacts are extremely rare. The ROM collections include a drilled amber amulet from a Middle Neolithic passage grave in Denmark, two strings of amber beads from the Fayum in Egypt, and a necklace from Suffolk, England. The beads and necklace are Late Roman artifacts (4th to 6th century A.D.).

Amber has been used in medicines at least since the time of Hippocrates (400 B.C.). Powdered amber was taken internally for diseases of the stomach; it was also heated as a fumigant for respiratory problems, to heal running eyes, and to soothe women in labour. Oil of amber, which has properties much like those of turpentine, was taken internally for asthma and whooping cough and applied externally as a chest liniment. Amber necklaces are worn to this day by some Baltic and Mediterranean people as amulets against croup, goitre, fits, dysentery, and nervous afflictions. A lump of amber held in the hand was thought to ease a fever. People suffering from jaundice wore amber in the belief that the



Amber amulet from a Middle Neolithic Danish passage grave (2nd millennium B.C.).

Late Roman amber beads, including a carved amulet, from the Fayum, Egypt (6th century A.D.).





Meerschaum and amber cigar holder,
8.7 cm long. Probably Austrian, about
1900.

Seated figure of a Lohan holding beads.
Chinese. Amber has traditionally been
used for religious figures in many cul-
tures.

powerful yellow colour of the stone would extract the yellow from their skin, and with it, their illness. Its supposed germicidal effect was at least partially responsible for the use of amber in the Middle East for the mouthpieces of hookahs, and in European cultures for smoking articles such as cigar and cigarette holders and pipestem.

Amber figures prominently in the folklore of many cultures. Mothers would tie an amber bead about the necks of babies to protect them from evil. An amber spindle was thought to prevent thread from tangling as it was spun. Amber prayer beads have been popular among Buddhists, Christians, and Muslims for centuries, originally probably as much for the superstitious value of the stone as for its comforting feel. In the Far East amber has long been considered a symbol of courage. The ancient Chinese called amber *hu-pe* and believed that it contained the soul of the tiger. Northern European and Scandinavian folklore tells of the Amber Isles or Amber Mountains (the Greek *Electrides*), the land of the dead at the end of the world. In Latin these were the *insulae glaesariae*, from the old Germanic word for amber, *glaes*. This became confused with *gles* (glass), and so were born the Glass Mountains of later fairy tales.



Chinese snuff bottle of amber carved in
the shape of a goldfish.



Dominican amber showing layered resin flow. Two beetles, 4 mm and 6 mm long, were trapped on the first flow surface and then engulfed by a subsequent flow of resin.



Spider (11 mm long) in Baltic amber.

Amber is found in sedimentary deposits almost worldwide, ranging in age from Mesozoic (200 million years) or older to sub-recent. It is hard to date, because associated palaeobotanical and stratigraphic data are often lacking. Because of its low specific gravity, amber floats in agitated sea water; for this reason it is usually transported some distance from its source site and redeposited in marine or estuarine deposits, while associated fossils are left behind or destroyed. The age of amber is beyond the useful range for Carbon-14 dating, and the material does not contain enough potassium to permit K-Ar radiometric dating. Nevertheless some amber has been dated on the basis of biological material (largely insect and plant remains) trapped within it.

As resin flowed from the trees, small animals and plant fragments sometimes became trapped on its sticky surface and were engulfed by subsequent flows. In this way a great wealth of organic material was entombed, preserving in minute detail organisms far too delicate for preservation by normal means of fossilization, and providing us with an amazing insight into the life of the past. Most often found are small arthropods which lived on or near the host tree and would be likely to crawl or fly onto the fresh sticky resin. Larger insects were trapped as well, but their remains are rarely complete. In many instances there are signs of a struggle—air bubbles and swirl marks in the amber, or detached legs or wings. Other common organic remains include normal forest-floor debris—small flowers, leaves and needles, mosses, and lichens. Rare discoveries of feathers and bat hairs, and even a tiny frog have been recorded.

Two 5-mm-long flowers in amber from Tanzania. Tanzanian amber is young (Pliocene—4 million years) and is unusually pale and clear.



Lump of Dominican amber containing part of a leaf, 3.5 cm long.

The quality of preservation of organic remains in amber is highly variable. Masses of organic debris or air bubbles may make the amber so opaque that the remains are unidentifiable. In spite of the preservative effect of the resin, an organism's own bacteria often caused partial or complete destruction of identifying features. Frequently the internal tissues of an insect or other small animal have dried up and decomposed, leaving only a thin carbonized film in the shape of its body. Nevertheless external details are often so beautifully preserved that identification to the species level is possible. Hundreds of species of arthropods have been identified and scientifically described in amber from the Baltic, the Dominican Republic, Canada, and Mexico. In one extraordinary case a gnat was preserved in Baltic amber with its internal tissues intact, literally embalmed by the resin. Electron-microscopic studies revealed cells with nuclei and what appears to be chromosomal material preserved. If this is so, it may be possible to replicate the gnat's DNA and compare its 40-million-year-old genes with those of its modern-day counterparts.

The botanical source of amber is a question that has interested scientists for centuries. Pliny recognized that amber was a resin when he wrote:

Amber is produced from a marrow discharged by trees belonging to the pine genus, like gum from the cherry and resin from the ordinary pine. It is a liquid at first, which issues forth in considerable quantities, and is gradually hardened by heat or cold, or else the action of the sea...

Tacitus wrote:

There is reason to believe that amber is a distillation from certain trees, since in the transparent medium we see a variety of insects, and animals of the wing, which, being caught in the viscous fluid, are afterward, when it grows hard, incorporated with it.

In 1836 H. R. Goeppert went so far as to name formally the tree which produced Baltic amber *Pinites succinifer*, in reference to the Latin name for amber, *succinum*. Attempts to classify amber according to botanical origin have been complicated by the lack of accompanying palaeobotanical evidence in most amber deposits.

Over the past twenty years or so, the emphasis in scientific studies of amber has shifted from a description of the inclusions to the study of the amber itself in comparison with modern resins. Many trees today exude greater or lesser amounts of a sticky substance, either gum or resin. Gums, such as that produced by cherry trees, are water-soluble; they do not accumulate on the ground to be buried and thus have not been fossilized. Resins, on the other hand, are not soluble in water. Resins consist of a series of volatile and non-



A treasure chest of Oligocene life. This 48 mm × 38 mm pendant contains several ants, a spider, a springtail, a flower, numerous insect and plant fragments, and air bubbles.

volatile substances called terpenoids. On exposure to air, the volatile fractions evaporate fairly rapidly. The remaining non-volatile fractions accumulate and, if they are sufficiently resistant to microbial decay, they may become fossilized. In the process of fossilization the resin undergoes a certain amount of oxidation and polymerization, or rearrangement of the molecules internally. The final composition of amber has many factors in common with the parent resin. Infrared spectrophotometry has revealed that some ambers have characteristics sufficiently close to those of particular modern resins to indicate close affinities in the source trees.

About eighty genera of living plants, most of them trees, produce appreciable amounts of resin. Of these about two-thirds are tropical. Among temperate tree families, only the conifers Pinaceae and Araucariaceae are good candidates for fossil resin producers. The tropical angiosperm families Leguminosae, Dipterocarpaceae, and Burseraceae are likely candidates, showing significant resin production under natural conditions and a suitable palaeobotanical history.

By far the best-known and best-documented amber occurs along the Baltic coast, where it has been collected since Neolithic times. Baltic amber is considered by some purists to be the only true amber; its properties are used as the standard by which amber from other sources is described. Although traditionally considered to have been a type of pine, the source tree was probably an Araucarian, a group of conifers that originated in the Triassic Period, over 250 million years ago. The amber is preserved in clays of Eocene to Oligocene age (about 40 million years old) from which it has weathered out, to be washed onto beaches by the sea. More recently amber has been mined from the clay.

Baltic amber has been an important item of commerce for centuries, being traded in England, Africa, and even as far away as China. Infrared spectroscopic studies of Mycenaean and certain Assyrian amber artifacts show without doubt that the amber is Baltic in origin. Ancient literature makes many references to the trade in amber from the north.

Amber occurs in small deposits on the east coast of Sicily, along the Simeto River near Catania. It is usually a dark transparent red, blue, or green, with a high sulphur content, and contains no succinic acid. It is interesting that the Romans probably did not know about this source of amber. The amber used in Roman artifacts is apparently all of the Baltic variety. Diodorus made no mention of a Sicilian source of amber, although he described in some detail the northern amber trade routes.

Amber has been mined in Burma, near the Myitkyinam Hukong Valley, since the Han Dynasty (206 B.C.–A.D. 220), mainly for export to China. Bur-

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Reclining figure in clear red Burmese amber, on a rosewood stand.

mese amber is usually a dark red-brown, often with numerous cracks infilled with calcite, and it does contain insect and plant inclusions. The source tree was probably an angiosperm, from the family Burseraceae. Burmese amber is harder than Baltic (hardness 2.5 to 3) and slightly denser. It is thought to be Eocene in age (45 million years).

In Mexico amber occurs near San Cristobal las Casas, in the Province of Chiapas. Mexican amber is similar to Baltic but softer, occurring in various shades of red, yellow, and almost black, and it contains a rich arthropod fauna. Mexican amber is thought to be Miocene in age. It was probably produced by the leguminous tree *Hymenea*, a genus still producing commercially used resin in Mexico today. The Aztecs revered amber, and Montezuma is said to have had a spoon of amber which he used to stir his chocolate.

When Columbus reached the Dominican Republic he found the natives there using a fine amber which occurs in deposits near Santo Domingo. Dominican amber is a retinite. It is softer than Baltic amber and slightly younger, being Oligocene in age (about 25 to 30 million years). About ten per cent of Dominican amber includes animal or plant fragments. Since much Dominican amber found its way to Europe, it is possible that some supposed Baltic amber artifacts made since the 16th century may actually be made of Dominican amber.

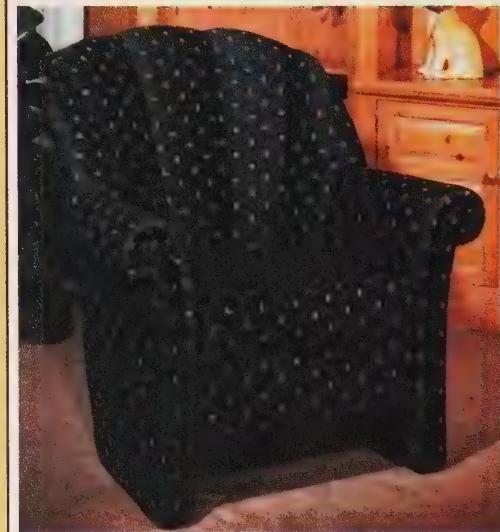
In Canada small amounts of amber have been found in Cretaceous deposits (100 million years old) along the Saskatchewan River and the shores of Cedar Lake, Manitoba. The Canadian amber contains a well-preserved fauna of insects, spiders, and mites, as well as pollen, spores, and plant fragments. Unfortunately the site is now covered by water. Cretaceous amber also occurs in Lebanon near Saida.

Since amber has been held in such high regard it is hardly surprising that cheaper substitutes have often been sought. Among natural substitutes for amber are copal, horn, and, of course, glass. Synthetic substitutes developed over the past century include celluloid, bakelite, and other plastic substances. But though they may imitate amber in appearance, all are distinguishable from amber on the basis of different physical properties.

And amber alone—light in weight, silky smooth, and warm to the touch—possesses those evocative qualities that have made it the inspiration of myths and legends and a much prized and sought-after commodity since prehistoric times.

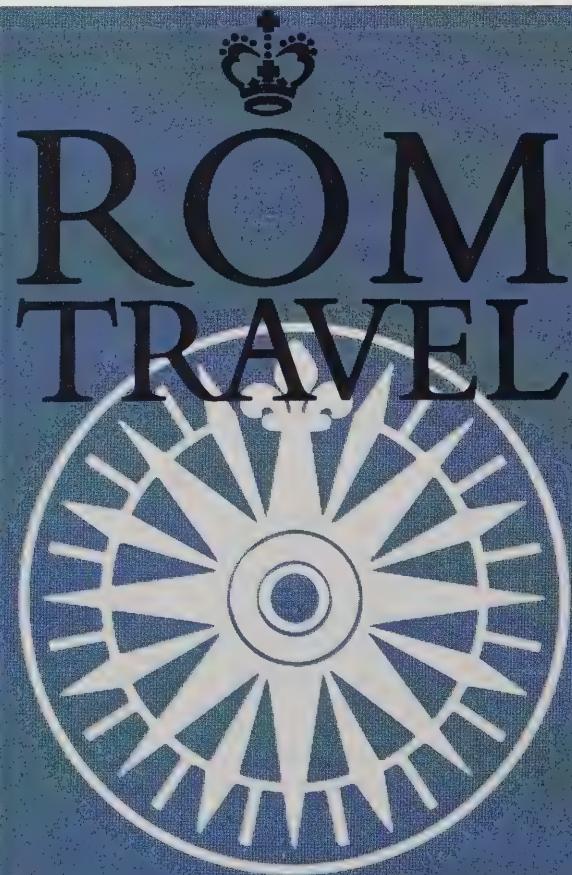
Janet Waddington has an M.Sc. degree in palaeontology, and has been a curatorial assistant in the Invertebrate Palaeontology Department since 1972. She has lectured on the subject of fossils and fossilization to both amateur groups and university students and is the author of An Introduction to Ontario Fossils. As the person who identifies and explains the many and varied 'fossil finds' that are brought or sent to the Museum by youngsters from six years to sixty, she has a long-standing interest in making available information on fossils.

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MARCAHUAMACHUCO

Dynastic Architecture before the Inca



WHEN European adventurers first arrived in the New World they found, in some regions, uncivilized tribal communities and, in others, urban settlements with monumental architecture rivalling the palaces and cathedrals they had left behind. Some of the New World peoples were living at primitive, tribal levels, while others administered far-flung, highly organized empires. One such empire was the Inca civilization in Peru.

The Inca bureaucracy is well known as a model of an expansive, imperialist system. It had spread very quickly and had been in existence only a couple of generations before being abruptly cut off in the 16th century. In many cases the peoples conquered by the Inca had previously been living under local dynasties that did not pursue territorial expansion. Why these pre-Inca polities remained localized, and exactly what differentiated them from the later expansionist states, is one of the many questions currently being investigated by Andean archaeology. A project at Huamachuco in the northern highlands of Peru may provide some tentative answers through an examination of pre-Incaic architecture.

The Huamachuco Project is directed by John and Teresa Topic of Trent University. Since 1981 the Topics have been surveying sites in the vicinity of the modern town of Huamachuco about 480 kilometres north of Lima at an altitude of approximately 3600 metres. At present, Huamachuco is the market centre for a thriving agricultural district that benefits from the abundant rainfall and fertile soils of the region, attributes that no doubt made the area desirable and important in ancient times as well.

The hills around Huamachuco fairly bristle with archaeological sites. Dominating them all, on a mountain all by itself, is the largest site of the region, Marcahuamachuco, another three hundred metres up above the town. Marcahuamachuco actually comprises four component sites: Las Huacas (the temples), Cerro del Castillo (the castle), Cerro de las Monjas (the nunnery), and Cerro Viejo (old Marcahuamachuco), which follow each other in a rough line from southwest to northeast along the mountain-top, some five kilometres from end to end. In the illustration on page 21, Cerro del Castillo is the larger massif; Cerro Viejo, the smaller to the left; Cerro de las Monjas lies in the saddle between the two; and Las Huacas is approximately where the road can be seen switchbacking up the mountain on the right.

Although there was an Inca settlement at Huamachuco, and Inca ruins dot the hills around, Marcahuamachuco appears to represent much earlier occupation, from approximately A.D. 350 to 1100. The architecture of the site is startling; very large in scale, very powerful in effect, and very unlike later architecture.

Cerro del Castillo

Cerro del Castillo is the most substantial of the four sites making up Marcahuamachuco; the biggest and best-preserved structures are here. In effect, it is a walled town. But the "walls" are not really defensive; they are narrow two-storey buildings perched on the cliff-edge in long, winding lines that form a nearly continuous perimeter stretching over four kilometres around the mountain-top. The total, roofed floor-space they contain is about 20,000 m², which might represent about 150 dwelling units. Right on the edge of the cliffs, they were positioned to be conspicuously visible from the valleys below.

At the west end of Cerro del Castillo the ruins of a great gate can be seen. Neither drawing nor photograph conveys the effect of grandeur, magnificence, and monumental scale produced by this setting. The high wall curving away around the cliff, the wide void stretching to distant peaks, and the drop to the valley floor seem to gather together all the strength and immensity of the whole mountain. I first arrived there fending off a fierce farm dog, and even while I was desperately throwing stones the power of the place still registered. I thought immediately of Moussorgsky's "Great Gate of Kiev" in *Pictures from an Exhibition*, the sonorous chords, deep multiple harmonies, and tremendous momentum. This is one of those rare places where the intervention of man has actually heightened the authenticity of nature.



Photographs, watercolours, and drawings by the author

The illustration on the title page shows Marcahuamachuco from the southeast.

Left: The West Gate, Cerro del Castillo.
Pencil-sketch reconstruction.

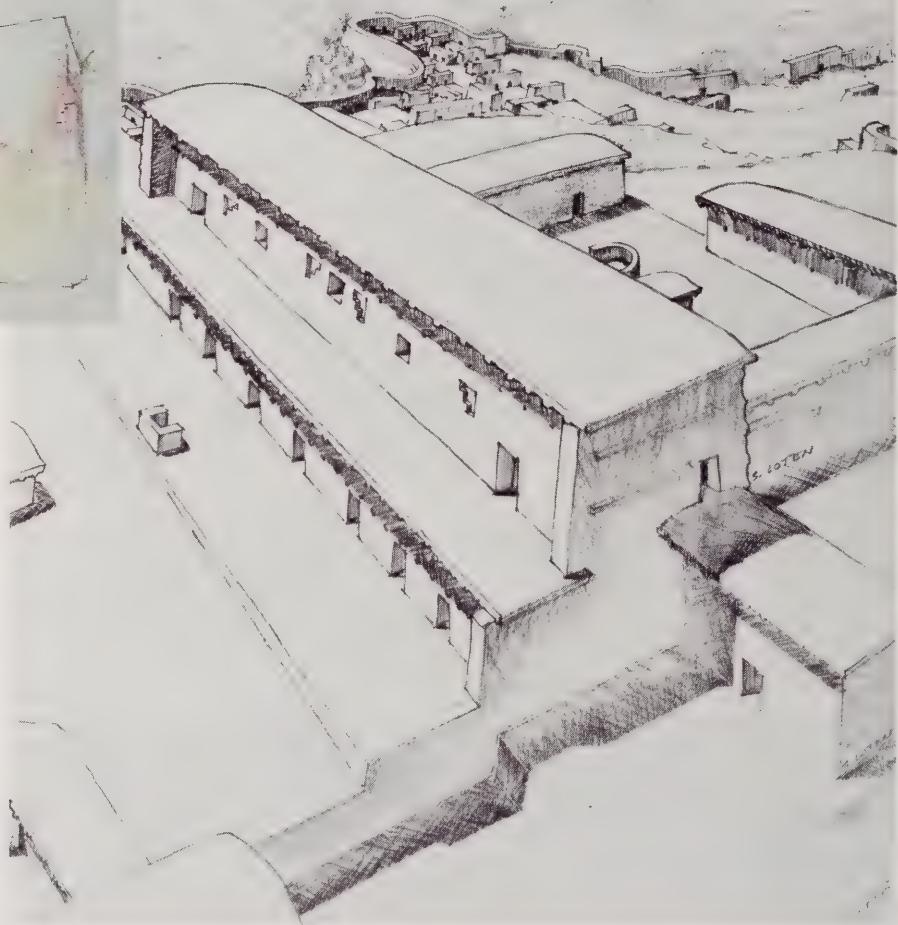
Below: The West Gate, Cerro del Castillo,
from Cerro de las Monjas.





Above: Gallery A, Cerro del Castillo. Watercolour sketch showing estimated wall heights.

Right: Gallery A, Cerro del Castillo. Pencil-sketch reconstruction.



The edge galleries wrap around Cerro del Castillo a little below its topmost level, and immediately within the perimeter they define are clusters of densely packed small structures that seem to be crowding away from the centre of the site. Above these the dominant structures rise, much larger and more open. These, except for the Castillo itself, contrast with the curving edge galleries; they are rectangular blocks, very stiff and proper, forming a series of quadrangles, with Gallery A at the southwest end and the Castillo, re-introducing the curved line, at the other.

Gallery A Gallery A is the largest and best preserved of the central rectangular structures. It stretches seventy metres from end to end and its masonry walls still stand at least ten metres high. Despite its massive exterior the building contains only a few rooms and only two storeys. At the first or plaza level are three parallel rows of very narrow, corridor-like rooms less than three metres high, scarcely one-third of the total height. Doorway openings in the outer front wall provide the only natural light. The arrangement suggests a technical or service function like a Victorian cellarage, rather than rooms intended as dwelling spaces.

The second storey, on the other hand, presents an utterly opposite picture. Here, the entire length of the building is taken up by one single, enormous space at least seven metres high, similar in width, and nearly seventy metres long—a vast room by any standards. This inevitably reminds one of the Inca

great halls, or *kallankas*, capacious enough to house the conquistadores' entire army, including horses. The great room in Gallery A even has the series of niches on the rear interior wall-face which is considered one of the distinguishing features of the Inca *kallanka*. The exterior front wall of this room, above the ground floor rooms, is decorated with a series of stepped-fret niches, further evidence of the special status associated with the upper-storey room.

A building like Gallery A could have served a number of particular functions, but surely must represent some one specific institution in ancient Huamachuquino culture. The huge upper room, able to accommodate hundreds at one time, must be a key to this identity. But only through excavation can we hope to approach a better understanding. The kind of evidence that may still remain beneath debris, and architectural features not now visible, will certainly throw some light on the problem. The means of access to the upper room, not at present evident, will undoubtedly affect our interpretation. A wide stairway, for example, would indicate an assembly function, a certain level of formality, and large numbers of people, while a few ladders might imply that, despite its imposing form, Gallery A was nothing more than a monumental grain storage warehouse.

In both exterior form and interior plan, Gallery A is a building type that recurs at least five or six times within Cerro del Castillo but does not appear elsewhere either on Marcahuamachuco or at other sites in the region. Therefore it might be argued that these structures related specifically to the people who built, occupied, and presumably ruled from Cerro del Castillo, and that they symbolized either identity or form of government; in other words, that Gallery A was both dynastic emblem and instrument.

One can speculate further about the fact that, except for the group containing the Castillo, Gallery A type buildings are always the largest of those centred on any particular plaza. Perhaps, then, Gallery A housed, and emblematically identified, a particular ministry within a state bureaucracy, with the other buildings around the plaza housing support facilities and playing a less symbolic role. If such an inference could be substantiated, then we could begin to see the Huamachuquino state as organized very much along the lines of the later, and more expansionist, Inca empire.

Gallery A, Cerro del Castillo, as seen from the Castillo.



Right: Castillo, Cerro del Castillo. Pencil-sketch reconstruction.

Below: Castillo, Cerro del Castillo. Pencil-sketch reconstruction from the east.



Castillo The Castillo has none of the contrived, axial formality of Gallery A, yet it makes an even clearer and stronger statement of power, authority, and identity. It is both a building to be in and a platform to be on. In this latter aspect it constitutes the final, topmost summit of the whole mountain and can only have occupied this position by design.

The Castillo's curving outer walls enclose a labyrinth of rectangular rooms up to five storeys high and five or six rooms deep. Many inner chambers must have existed in utter darkness. The east side resembles a pyramid, essentially solid, with very small cist-like spaces, rising up through the multi-level cellular matrix of rooms. This may have been a burial structure of very special significance within the building. Excavation on a large scale will be necessary to throw light on this puzzling and strangely moving work of architecture.

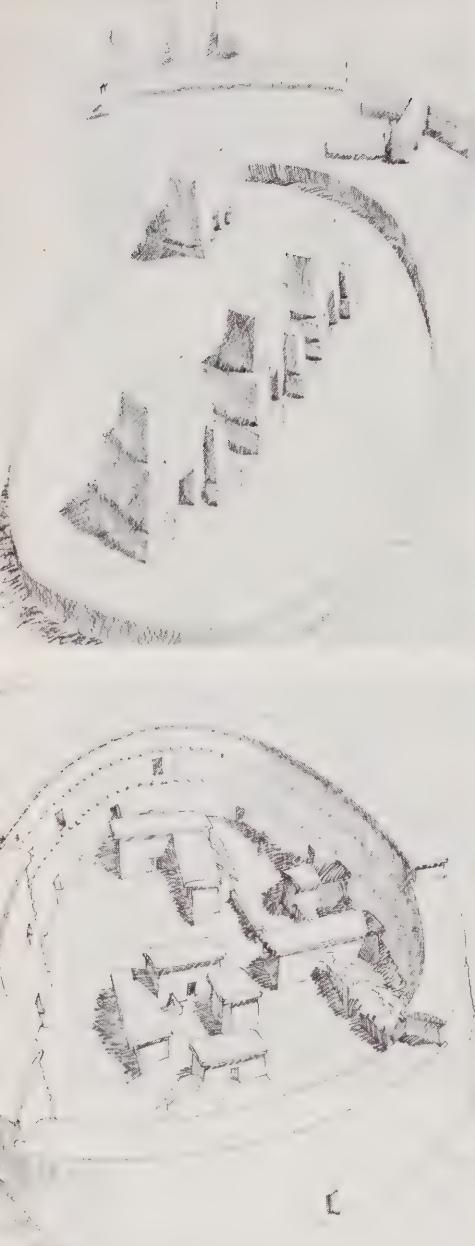


The Castillo is monumental in scale, vague and indeterminate in form, yet at the same time powerful—a rare combination of attributes. Monumental buildings generally have clear formal geometries, and indeterminateness usually works against strength of expression. Although the building asserts a very powerful presence one cannot be sure in which direction it faces; or, indeed, whether it even has a "front".

Certainly the mountain-top site contributes to the sense of power that the Castillo radiates. But the site does not achieve this by itself—the form of the building echoes that of the site and amplifies the strength received from the mountain. This can be seen in the way that the curving outer walls reiterate the undulating line of the perimeter galleries along the cliff edge, while, in dramatic collision, the rectangular inner rooms repeat the quadrilateral organization of the central plazas and monumental rectangular galleries at the site centre. If we can accept that this relationship, which one can certainly recognize, was consciously contrived by the builders, with deliberate intent to embody meaning, then we must acknowledge them as very sophisticated, skilled architects.

The outer walls of the Castillo abut earlier masonry of rectangular galleries on its southeast side. The galleries had been built first, the Castillo added later. Thus the overall site configuration must have been in place before the Castillo was built. Its designers, therefore, could refer to this pattern on a smaller scale and use it to mirror architecturally a complex set of inter-relationships involving the place, the people, and their dynastic legitimacy, with the transcendental natural forces present on or in the mountain to back it up.

Castillo, Cerro del Castillo, from the northeast.



Top left: Burial towers, Cerro del Castillo.
Pencil-sketch reconstruction.

Top right: Burial towers, Cerro del Castillo.
Watercolour sketch showing estimated original wall heights.

Bottom left: Fort A, Cerro de las Monjas.
Pencil-sketch reconstruction.

Bottom right: Fort A, Cerro de las Monjas.
Watercolour-sketch reconstruction.



Burial towers Near the southeast end of Cerro del Castillo is a small group of rectangular burial structures within an ovoid enclosure; looted long ago, they presumably contained burials of high-ranking individuals, lords of Marcahuamachuco, though perhaps of lesser standing than those who may be buried in the Castillo itself. The tower forms seem intended as a declaration to the subject peoples in the valleys below; they remain quite clearly visible even now from many points in the southeast valleys, even though half-fallen. In ancient times they must have stood out conspicuously as an architectural embodiment of lineage, dynastic succession, and access to supernatural power through the deceased, who were regarded either as gods or as in touch with the gods. It surely must be no accident that they repeat the geometry of the site as summarized in the Castillo; rectangular central blocks within a curvilinear precinct wall.

Cerro de las Monjas

Beyond the west gate the mountain-top is no longer a contained community like Cerro del Castillo; no perimeter galleries confine the space, and no small structures clutter the surface. Instead, a series of large, ovoid complexes stand



well apart from each other, separated by empty stretches of bare rock or very thin earth. One of the largest of these is Fort A, an inappropriate name since the function of the building was almost certainly not defensive.

Fort A repeats the characteristic forms of monumental architecture on Marcahuamachuco; curving outer walls enclose rectangular room systems, though here in free-standing buildings. Some of these appear to be little more than sheds, while others have marked symmetry and formality.

The outer galleries vary in height in different parts of the perimeter, as do the perimeter galleries of the Castillo. In the latter, this stepped configuration is dictated by irregularities in the cliff heights; but Fort A faces no similar site conditions. Its stepped roof-line may be, once again, an architectural statement of identity, claiming some kind of kinship with Cerro del Castillo.

Cerro Viejo

As the name implies, Cerro Viejo seems to be a precursor of Cerro del Castillo, a fact confirmed by radiocarbon dating. It has a similar edge gallery perimeter and rectangular central blocks, but all much further collapsed. It extends to the final northwest limit of the mountain-top, where it terminates in a stupendous complex of natural and man-made forms that rival the effect of the west gate to Cerro del Castillo.

It is hard even to guess at the significance of this installation. It might be an arrival point or the very opposite, a final innermost place of ultimate destination. Curvilinear and rectangular geometries are combined here, but not in clear reference to centre and periphery.

Las Huacas

At the opposite end of the mountain, outside the walls of Cerro del Castillo, and just below the cliffs, is another definable site which the Topics have named Las

Fort A, Cerro de las Monjas, from the southwest.

Las Huacas. Pencil-sketch reconstruction, looking northeast.



Huacas; this translates roughly as "sacred places". It occupies a ridge developed so that particular natural features come into dramatic juxtaposition with man-made platforms and buildings. In this respect it parallels the northwest end of Cerro Viejo and implies an architectural program that extended over the whole mountain-top from end to end.

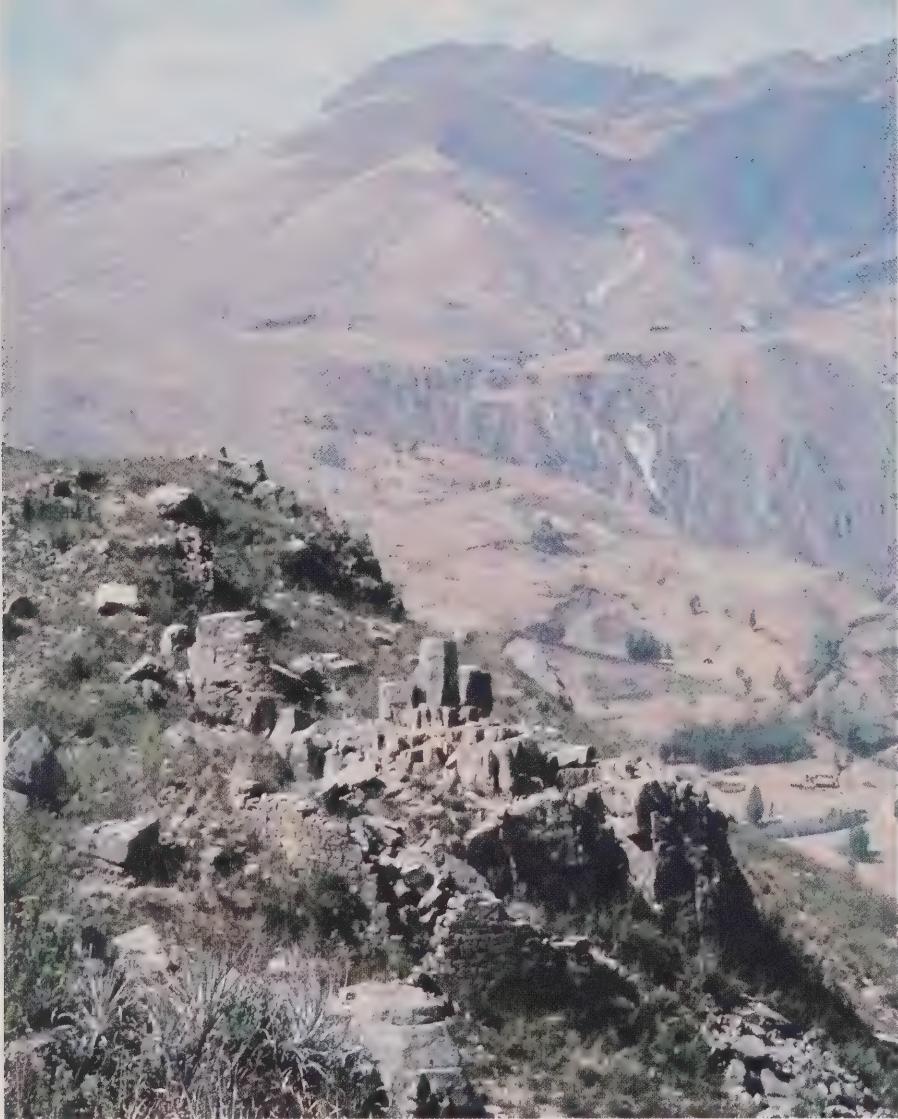
A number of focal points within Las Huacas centre on features such as caves, pits or wells, rock groupings, and rock chimneys. The most prominent rock chimney has a circular masonry wall built around it. All these features seem to imply places of very special significance, such as the Inca *wak'a*, sacred springs or rocks which offered direct communication with the supernatural powers and frequently served as oracular centres.

Documentary accounts from the conquest period relate that just before his capture at Cajamarca the Inca Atahualpa had cast down the oracle at Huamachuco. This oracular site has never been identified. Las Huacas may be a good candidate. It even appears to have been destroyed violently; some of the large chimney slabs still lie across smashed wall lines.

Summary

Cerro del Castillo, Las Monjas, and Cerro Viejo all present the same architectural format based on an orthogonal central order contained within a curvilinear perimeter system. Central units are ordered and symmetrical; peripheral ones irregular and circumstantial. The format appears on an urban scale in the settlement of Cerro del Castillo; on a precinct scale in the burial towers; and in individual buildings like the Castillo and Fort A.

The consistent recurrence of this format over Marcahuamachuco suggests that it is not a result of architectural expediency but rather reflects intentional symbolic ordering. Absence of the pattern in Las Huacas implies that its symbolism is not specifically religious. The most probable interpretation, therefore, is that it is a dynastic emblem or symbol, since nearly all pre-Columbian monumental architecture is either dynastic, religious, or some combination of both.



Las Huacas, looking southwest.

Architecture as dynastic display on Marcahuamachuco can be readily understood as referring to the people who lived on the mountain, their lineage and legitimacy, and their right to rule by virtue of access to the supernatural powers that confer benefits, and disasters, on all peoples of the region. At the same time, the architectural statement identifies the mountain itself as the place where this possibility for power is available to a particular chosen social group.

Las Huacas embodies the interaction of a professional priesthood with supernatural power and documents the intellectual framework of the political/religious system. The proximity of the burial towers just above Las Huacas associates dynastic symbols with religious knowledge. Thus two essential factors are architecturally presented together: the mountain as a place where particular supernatural powers are present, and the people who by heredity have access to this power.

In the final analysis, then, the architecture of Marcahuamachuco can be seen as instrumental in the exercise of temporal power at a particular locality. If the basis for rulership was really derived from a conception tied to a particular place, then it is hardly surprising that such a dynasty, no matter how powerful within its region, would not tend toward territorial expansion. The Inca, to embark on a career of empire, must have developed a different understanding, not keyed to any one single locality. This may be the fundamental consideration that distinguishes the monumental architecture of Marcahuamachuco from that of later, more widespread cultures and at the same time explains its unique character. That monumental pre-Columbian architecture had dynastic content may not be a very remarkable observation, but rarely is the basis for dynastic rhetoric so clearly visible.

Stanley Loten is an architect and a Fellow of Massey College in the University of Toronto. After graduating from the University of Toronto, he did postgraduate work on Maya architecture at the universities of Toronto and Pennsylvania. Since 1971 he has been associated with the ROM and David Pendergast in the excavations at Altun Ha and Lamanai in Belize. At present Dr Loten is a professor in the School of Architecture at Carleton University, where he teaches architectural design and history.



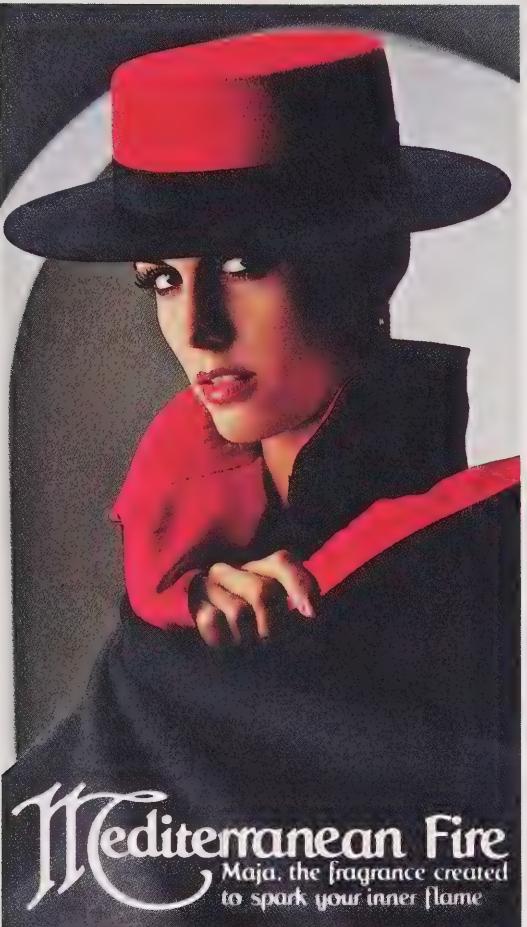
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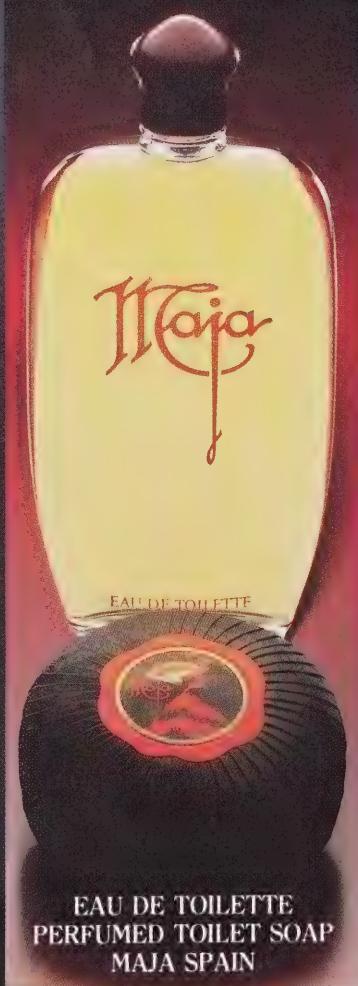
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DINOSAUR BONES IN THE CHIHUAHUA DESERT

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THE results of visitor polls and the success of such occasions as Dinosaur Week leave no room for doubt that the dinosaurs are among the most popular attractions in the ROM, particularly among younger visitors. The fascination of the public with the giant fossils on view in the gallery of vertebrate palaeontology—the only gallery to survive the renovation and expansion project unchanged—is seemingly endless.

It is many years, however, since the ROM sent out its last dinosaur expedition. The only part of Canada where dinosaurs are found in any quantity is Alberta, the source of much of the ROM's existing collection. Provincial regulations, however, have made dinosaur collecting almost impossible except for Alberta institutions. The Tyrrell Museum at Drumheller is especially active preparing for its 1985 opening. It was therefore with some excitement that I listened to Dr Shelton P. (Shelly) Applegate, when he mentioned finding quantities of dinosaur bone on a recent survey in the state of Coahuila in northern Mexico.

Gord Edmund examines a tibia (shin-bone) of a hadrosaurian dinosaur exposed by erosion. The bone is at least as long as any at present in the ROM gallery.

Shelly is an American shark expert who has lived in Mexico for several years, and the subject came up as we shared margaritas after one of the scientific sessions of the 1982 meeting at the Society of Vertebrate Paleontology in Mexico City. Would the ROM, he wondered, be interested in following up this lead? I assured him that we would.

So it came about that, in May 1984, Dr Chris McGowan and I flew to Mexico City, where Shelly and one of his students, Jaime Alvarado, met us at the airport with an ancient pickup truck. Shelly apologized for the mechanical condition of the truck, but assured us that it could be rejuvenated to take us to the field area. I was more concerned that it would die before we reached the hotel.

We spent the next three days in preparation for field work. Nothing moves very quickly in Mexico, and it seemed as if everything was designed to make our work difficult. The government map store was literally miles from the University, and both were miles from our hotel. Some of our time was well spent examining the modest collection of fragmentary dinosaur bones in the Instituto de Geología. Finally, and most important, we negotiated a formal agreement with the Director of the Instituto, Dr José Guerrero, who was very cooperative and eager to have us work on this project. The terms give us complete freedom to collect and study whatever we find, on condition that a reasonable portion of the material is returned to the Instituto when our research is completed.

The location of the dinosaur find was in the Chihuahuan desert, about 500 kilometres south of Del Rio, Texas; and so the following day we left at dawn to drive the nearly 1000 kilometres north to Monterrey. Shelly's venerable vehicle had undergone major surgery during our layover in Mexico City and performed admirably with new brakes, clutch, ignition system, and several other essentials. The only problem was that the front seat accommodated only three people and there were four of us. One person had to ride in the box-like back, which was filled with exhaust fumes. Actually the front seat wasn't much better, because the gas tank behind the driver's seat had a slow leak, which also exuded fumes. It was simply a matter of whether you preferred to inhale the fumes before or after combustion.

In Mexico, as in any other part of the world, it is good practice to introduce yourself and your intentions to the local people. We met colleagues at the University of Nueva Leon, where there is an awakening of interest in palaeontology. We hoped also to visit the school at Saltillo, but it was strikebound. Next we drove to the small towns near the dinosaur localities and met the country people themselves. They are a proud, hard-working people, eking out a precarious living as ranchers of cattle and goats. They roam widely on horseback, and it was their sharp eyes that had first spotted the dinosaur bones. Eager to show us the best localities, they piled into the truck.

Some of the places could be reached by "road", the latter euphemistically described as *obra a mano*, or hand-made. These roads are constructed of cobblestones and earth, and their main advantage is that they are relatively free from thorns and spines. In many places the direct route was cross-country, but here on the edge of the Sierra Madre Oriental the land is dry, rugged, and rocky, and the only vegetation is cactus, agave, palo verde, mesquite, and other thorny xerophytes. Even truck tires would not survive many metres of driving in that desert. Where there were no roads we had to resort to horses. Mine was a particularly small horse, obviously more appropriate for one of the short, wiry Mexicans. My field boots wouldn't fit in the stirrups, so I clung tenaciously to the pommel while we bounced our way across the rocky landscape.

The surface of the desert is a pale grey silt covered with reddish-brown cobbles and pebbles weathered from the ubiquitous sandstone layers. Since the rocks are about the same size and colour as the bones, our job was doubly difficult. In western North America dinosaur bones are usually found in badlands areas, where they can be clearly seen in sandstone and shale; not so in the Chihuahua desert.

We found no skeletons or skulls. The most complete specimens were single vertebrae or toe-bones, and even these were not abundant and had obviously

Below (top): Fragmentary bones are found intermixed with sandstone cobbles. Surface fragments are of value mainly to lead us to the place where complete bones are weathering out.

Bottom: When the bone-bearing layer has been located, good quality specimens can be excavated. Although this hadrosaur pubis is cracked in several places, it is not distorted and could easily be restored to resemble its original condition. Careful collection, with the use of plaster bandages, is necessary to ensure the safe shipment of such specimens.





lain out in the weather, perhaps for centuries. Our job was to find the "mother lode"—the layer from which the bones were eroding. The rare but violent rainstorms had washed exposed fragments several feet downhill, scattering the already fractured bone. Only when these scraps were traced to their sources did we manage to uncover complete bones in the silty shale layers. They were cracked, but undistorted. Probably the bone will be of even better quality the further we dig into the hillside. We expect to have no problems collecting it, but on this first trip we were reluctant to disturb the bones more than necessary. On future trips the bones will have to be impregnated with a solution of plastic and allowed to dry in the sun. Next, the blocks of rock containing the bones will be wrapped in bandages of plaster and burlap—the same technique that a surgeon uses on broken limbs, but on a larger scale. Finally, the blocks will be crated for their journey to Toronto.

On this first exploratory trip, we were not equipped to do large-scale excavation, but we had accomplished our mission by proving that there were numbers of good dinosaur bones at several sites. Still unanswered is the question whether the accumulations represent the bones of single individuals, or whether they are "bone beds" containing scattered and intermixed remains of several individuals. Only large-scale excavation will give us the answer. Both types of deposit are found elsewhere, and both are of immense scientific interest.

From the bones we picked up, we have deduced that several types of dinosaurs are present. By far the most common are the hadrosaurs, or duck-billed dinosaurs. The jaw fragments, limb bones, and other parts suggest that they were large, probably flat-headed types characteristic of very late Cretaceous time. Other bones suggest the presence of a ceratopsian (horned dinosaur) and a tyrannosaurid (flesh-eater). One small scrap resembles a foot-bone of an ornithomimid (ostrich-like dinosaur), and some small vertebrae resemble those of the crocodile-like *Champsosaurus*. These animals lived between 65 and 75 million years ago, during the Upper Cretaceous period of earth's history. Exact determinations must await the collection and preparation of more complete material.

We are now making plans for a return to these sites. Winter is cold in the mile-high desert, but summer is blazing hot. October has been selected as the

Left: Most of the bones had been discovered by local ranchers on horseback. They were happy to show us the locations and will be very helpful on future collecting expeditions.

Above (top): This toe-bone from the hind foot of a duckbill dinosaur (hadrosaur) had lain on the surface for many decades and shows the effects of weathering.

Above (bottom): Gord Edmund (left) and Shelly Applegate at Presa de San Antonio, preparing to explore on horseback. Cactus and thornbushes make cross-country travel by truck impossible.



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best time for field work. We will have to set up tent camps with our own electric power and water purification and cooking facilities, probably moving camp at least once as we work farther afield. We will bring our equipment from Toronto in two trucks and utility trailers, but will buy most of our supplies in Monterrey or Saltillo. The local people will probably be our greatest asset. They know the area well and have had lifetimes of experience in the desert. Once funding has been allocated, we will arrange with the head men of the villages to locate and mark the most promising bone concentrations; then they will cut roads through the cactus and thornbushes to permit the trucks to get in.

These preliminaries can be carried out before we arrive, allowing us to make the best use of our time away from the Museum. Once we have set up camp and surveyed the sites, the local crews will remove overburden and assist in handling the plaster-wrapped blocks. The latter may contain dozens of bones encased in the surrounding rock and can weigh hundreds of kilograms. While we may have glimpsed some exposed areas of bones during excavation, it is safest to leave them covered with the rock that has protected them over the millennia. Only when the blocks are opened under controlled conditions in the Museum will we know for certain what we have collected.

Even if it were still possible to collect dinosaurs in western Canada, there is a special excitement about collecting dinosaurs in Mexico. We already have a fine collection of dinosaurs from western Canada, but those from Mexico may well be new species. Then there's the convenience: believe it or not, the Mexican dinosaur fields are actually closer to Toronto than Alberta's!

We know there is an abundance of good bone there. If all goes well 1985 should see the first ROM dinosaur expedition in many years. We hope it may be only the first in a long series.

Gordon Edmund, curator in the Department of Vertebrate Palaeontology, has degrees from the University of Toronto and Harvard University and has been at the ROM for more than twenty-five years. He is interested in a wide range of extinct vertebrates but specializes in the study of giant ground sloths and their relatives. He has an active field program in Florida, where he has been unearthing clues to the environment at the time when giant sloths and their allies roamed freely between North and South America.

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VICTORIAN LONDON AND THE GOTHIC REVIVAL

Some highlights



DURING the 19th century, England's capital, like all cities caught up in the Industrial Revolution, underwent a vast expansion. As a result, present-day London is to a very large extent a Victorian city. With the growth in London's population came an increasing need not only for housing but for schools, churches, hospitals, and a wide range of other public buildings, some of them for functions that had not even existed in earlier times. As Britain's empire reached its greatest expanse, for example, there was an urgent need for new government buildings to accommodate the huge administration required to run it. Thus the 19th century was an age of feverish construction of government buildings, many of which were made the subject of architectural competitions. Meanwhile, the Industrial Revolution was not only fuelling the sudden growth of the city; it was also contributing new materials and new building techniques at a rate for which there were few, if any, precedents in history.

At the beginning of the 19th century, the dominant style of architecture in Britain was Greek Revival, the latest expression of a tradition of classical revival forms that had continued unbroken since the Renaissance. As the century progressed, this gave way to a more robust classicism reminiscent of Imperial Rome. The Imperial style is exemplified in the British Museum (built 1823–47) and the National Gallery (1834–38). Further developments resulted in a Renaissance Revival, which produced the stylistic vocabulary used in the design of the new Foreign Office in Whitehall (1860–75).

During the Victorian era, however, the dominance of classicism in architecture was challenged by the architects of the Gothic Revival. Sham Gothic ruins and residences in mock-Gothic style had been built in the late 18th century by aristocratic dandies like Horace Walpole; but by the 1830s Gothic had achieved recognition as a national style to the point that when a competition was held for a design for the new Houses of Parliament, it was a Gothic design that won the day. At this time the Gothic Revival in England had stronger associations with nationalism than with ecclesiasticism. Though some churches were built in Gothic style in the 1820s and 1830s, the reasons were generally economic: Gothic designs were cheaper to build.

The situation changed with the arrival on the scene of A. W. N. Pugin (1812–52), a strong proponent of Gothic forms in architecture, for whom such forms were nothing less than the architectural expression of the Christian faith. Besides establishing the predominance of these forms in the development of Victorian ecclesiastical architecture, Pugin was also a strong advocate of what might be called constructional functionalism—the view that “there should be no features about a building which are not necessary for convenience, construction, or propriety”, and that “all ornament should consist of enrichment of the essential construction of the building”. Pugin's insistence on integrity in construction was to have an important bearing on the development of architectural theory well into the 20th century.

Pugin's championship of the Gothic style in architecture found ready support in the Cambridge Camden Society, founded in 1839 by John Mason Neale and Benjamin Webb. The society's members were associated with the Tractarian and High Church faction of Anglicanism, and its influential periodical, *The Ecclesiologist*, published in one form or another from 1841 to 1868, advocated the revival of Gothic styles in architecture in connection with another revival, that of a pre-Reformation form of liturgy. Gothic architecture had become a symbol of radical causes!

There were many reasons for the adoption of Gothic Revival forms by Victorian architects. Though the results were often startling, and even contradictory, the buildings of the Gothic Revival were central to the Victorian ethos, with all its activism, its aggressiveness, its self-assurance, and, paradoxically, its more than occasional confusion about its own identity, and they reflect, in all their bewildering variety, the achievements of the age. A walk through the streets of London, in almost any area and any direction, will reveal something of the architectural legacy of the Victorian era.

Photographs by the author

Facing page: The Royal Courts of Justice in the Strand, one of London's greatest monuments of High Victorianism. The architect, George Edmund Street, was faced with the problem of designing a long façade that, because of the narrowness of the street, could never be seen frontally in its entirety.



St Dunstan-in-the-West, one of the earlier examples of London's Gothic Revival churches.

In the area where the Strand turns into Fleet Street, three phases of the Gothic Revival of the Victorian era are in evidence. The earliest phase is represented by the church of St Dunstan-in-the-West by the architect John Shaw the Elder (1776–1832) and his son John Shaw the Younger (1803–70). St Dunstan's was built between 1831 and 1833, just before Victoria's accession to the throne, when Gothic architecture was just beginning to be recognized as a national style, but before it became specifically associated with the ideals of Pugin or the Tractarians. It is an attractive structure, though its detailing has a thinness characteristic of the earlier buildings of the movement. The tower, with its buttresses and corner pinnacles and its polygonal fenestrated and traceried lantern, is based on an authentic Late Medieval model, the west tower of the church of St Botolph at Boston, in Lincolnshire. For all its imposing mock-medievalism, however, the tower of St Dunstan-in-the-West is attached to a structure which, though Gothic in ornament, is singularly un-Gothic in plan, having a floor plan in the shape of a polygon. Such a shape would have been entirely unacceptable to the more doctrinaire Gothic Revival architects of later generations. St Dunstan's is an example of those early Gothic Revival edifices built because the style had pleasantly nostalgic and fashionably romantic associations. Economics was also involved: most of these early Gothic Revival churches were built mainly of brick and could be erected more cheaply than Greek Revival structures with their stone porticoes.

Not far from St Dunstan-in-the-West is Lincoln's Inn, with its accumulation of 17th- and 18th-century buildings. In the late 1830s, a decision was made to add a new hall and library, and the commission was given to the architect Philip Hardwick (1792–1870), who was later assisted by his son Philip Charles Hardwick (1822–92). Charles Hardwick had already designed a number of London buildings in classical styles, but for the new hall and library at Lincoln's Inn he produced a Gothic Revival design. The new Houses of Parliament at Westminster by Barry and Pugin had already been begun, and the architects' choice of Gothic for the nation's parliament sanctioned the style for other important secular commissions. The foundation for the new hall at Lincoln's Inn was laid in 1843, and the building was finished by 1845.

The hall was built of red brick, as was the gateway, with quoins at the corners, and diagonal diapering of white. Flanking the front of the hall, Hardwick added two square towers with crenellated tops, and on one of them, a quaint little polygonal lantern with an ogival cap. Aside from such slightly asymmetrical touches, Hardwick's design was regular in plan, in effect one of classical symmetry done up in Gothic garb. There is a greater appearance of solidity in Hardwick's design than in the somewhat thin detailing of St Dunstan-in-the-West, but the slenderness of the buttresses along the side of Hardwick's hall and library and the repetition of identical window groupings along the walls, combined with a flatness of surface and lack of pronounced three-dimensional articulations, all reveal Hardwick's design as a typical work of the



The hall and library of Lincoln's Inn, built in 1843.



The Carey Street façade of the Royal Courts of Justice. Compare the architect's treatment of this side of the building with the façade illustrated on page 40.

early 1840s. It is a structure which, though somewhat severe and grave in aspect, is lightened by understated touches of whimsy, such as the ornamental chimney stacks based on Late Medieval prototypes, and the delicate little flèche-like tower which rises over the roof of the hall.

Contrasting with the hall and library designed by the Hardwicks for Lincoln's Inn are the Royal Courts of Justice in the Strand. Designed by George Edmund Street (1824–81), the Royal Courts of Justice are one of London's greatest monuments of High Victorianism. The commission for the building was awarded as the result of a competition held in 1866, though because of the complexity of the conditions, it did not go to the architect who was in fact the winner of the initial competition. As realized, the structure was smaller than originally envisaged, but was still of enormous size. Because the function of the courts was in a sense ancillary to that of the Houses of Parliament, a Gothic design was perhaps an inevitable choice.

Street was given an extremely difficult site for the courts, an enormous stretch of land along the north side of the Strand. Since the Strand is a narrow street, there was little possibility of designing a façade that could be seen frontally for the whole of its width. Street's solution to the problem was an ingenious one. Completed in 1878, the Strand façade of the law courts is broken into a series of sculpturesque groupings, which advance and recede in such a way as to present a fascinating play of solid and void, light and shade, and may be "read" in detail by anyone approaching from either east or west. To pass along the façade is to be presented with a series of ever-changing vistas of arches, traceryed windows, gables, spires, pinnacles, and rooftops, of varying forms and sizes. The overall impression is of a captivating asymmetry.

The Law Courts are a complex of architectural units full of surprises. The Strand façade is all white stone, but on the north, in Carey Street, the walls change to polychrome banding of red brick and white stone. The changes are not arbitrary—they reflect different functions of the different architectural units of the Law Courts. In Carey Street are gabled blocks and a splendid tower with

a polygonal turret containing a staircase. The banding of white and red recalls the striped walls and columns of Tuscan Gothic buildings, but is nevertheless a highly individual adaptation of polychromatic masonry and brickwork. The Carey Street tower has a tremendous sense of character and atmosphere; whatever else may be said of it, it is not dull.

For all their flair and bold originality—or, more probably, because of them—the Royal Courts of Justice became the subject of harsh criticism and abuse when they were completed in 1882. Such criticism, though it seems partisan and unfair, has lasted to the present day.

Also a subject of enduring controversy is one of the most famous of all English Gothic Revival buildings, All Saints Margaret Street, about two blocks east of Regent Street, not far from Oxford Circus. All Saints was built between 1849 and 1859 on the site of the former Margaret Chapel, which had earned a reputation in the 1830s as a ritually advanced church. All Saints was intended to be the model church of the Ecclesiologists, and the architect given the commission for the new structure was William Butterfield (1814–1900), who had associations with the Cambridge Camden Society and was a friend of one of the society's original founders, Benjamin Webb. Butterfield belonged to what was described as the High Church party of Anglicanism, and indeed he designed churches only for High Church congregations.

All Saints was designed to fit an extremely awkward and cramped site, and its nave is short in comparison to its width. As a model ecclesiastical structure it featured a deep and ample chancel and sanctuary. It is not the layout of the church, however, but its decoration that has provoked most controversy. The interior of the church is decorated with coloured tiles and with brilliantly coloured natural materials which include granite, serpentine, marble, and alabaster. It is all kaleidoscopic colour from the broad geometry of the tile floor to the painted and gilded roof beams. Stone inlay is everywhere, along the walls, and in the surfaces of the squat, polygonal pulpit. The mosaic effect of stone inlay complements that of the stained glass windows, with their brightly gleaming ranks of saints and martyrs in solemn hieratic array. To the glow of stone and glass in the nave is added the golden gleam and shining splendour of the sanctuary, with its vaults of blue, powdered with golden stars, and carved and painted retable with figures by William Dyce.

Butterfield's polychromy of the interior is continued through to the exterior of All Saints church in contrasting bands of red and black brick, with zig-zag and diaper patterns. All Saints was one of the first Victorian churches to feature such vivid contrasts of colour, and its influence was great: polychrome brickwork became fashionable not only for churches in England, but in the New World as well, both in the United States and Canada. Toronto embraced the fashion by the 1870s, as shown by the polychromatic brickwork of All Saints church at Sherbourne and Dundas streets and of the interior of the Church of the Redeemer at the corner of Avenue Road and Bloor Street.

In his own day Butterfield's polychromy was denounced as ugly, and even the most sympathetic historians of the Gothic Revival have been inclined to consider the polychromatic interiors of his churches as coarse and brutal. Such a negative assessment, however, does Butterfield wrong, and misses one of the most important aspects of his work—the full restoration of colour and vibrancy to church interiors for the first time since the English Reformation. Medieval churches had offered their congregations visual feasts of colour, an earthly metaphor of the New Jerusalem of the *Revelation* of St John, with its walls and foundations of gold, jasper, sapphire, chalcedony, and other precious and semi-precious stones. Butterfield's interiors gleam with colour and are among the greatest glories of his architectural achievements. Butterfield abhorred sham and selected natural, enduring materials for the decoration of his churches, materials that would withstand the onslaught of London's smoky atmosphere. Though his decoration at All Saints has a hard, tough quality, it is a mistake to call it coarse. His manipulation of form and colour shows wonderful skill and sophistication and imparts a real sense of drama and vitality. Butterfield was no slavish imitator of ancient buildings; his Gothic Revival style was not that of the



The spire of All Saints Margaret Street. The architect's use of contrasting bands of red and black brick is clearly illustrated here.



Above: Polychromatic decoration in the interior of All Saints Margaret Street.

Left: All Saints Margaret Street: the nave and chancel.

Middle Ages. Rather, like Street, he adapted Gothic construction and decoration to the conditions of his own day, and in this respect he was perhaps far more astute, far wiser than his critics were prepared to admit.

Churches, whatever their style, were at least traditional types of structure. With railway stations, however, Victorian builders were faced with the task of designing structures for which there were no historical precedents. The Industrial Revolution had made possible entirely new forms of construction, most notably those employing iron, or iron and glass, materials allowing the spanning of vast spaces with structures of an airy lightness in appearance. Paxton's Crystal Palace was the perfect paradigm for such structures, but the most im-

The austere lines of Cubitt's head building for King's Cross station, screening the two huge semicircular train sheds beyond, still show the influence of Classical Revival forms. They contrast strongly with the Gothic Revival forms which George Gilbert Scott employed in the design of St Pancras station, just a short distance away.



pressive monuments that survive in London today are the railway stations. Two of them, side by side on Euston Road near King's Cross, provide a unique comparison in the evolution of Victorian railway stations from the early 1850s to the early 1870s.

The earlier of the two, King's Cross, was designed by Lewis Cubitt for the Great Northern Railway and was built in 1851–52. Covering the track areas where trains arrived and departed are two vast semicircular sheds, 85 metres in length, each with a span of 32 metres. The sheds were constructed of curved ribs of iron and wood, with glass panels in the spaces between the ribs along the full length of the sheds. Across the sheds at the front of the station, Cubitt designed a head building of brick. This structure has a noble simplicity untouched by the influence of the Gothic Revival; it is of pure geometric form, with three massive pylons projecting forward and framing a brick screen with two enormous glass windows, their semicircular form following the rooflines of the train sheds behind them. The head building is remarkably austere in form and utilitarian in function, yet its very plainness imparts a sense of undisputed monumentality. Cubitt eschewed useless ornament, and the one feature of the head building that might be regarded as ornamental—the Italianate clock tower atop the central pylon—is in fact pre-eminently functional.

In marked contrast to the simplicity and unity of Cubitt's design for King's Cross station is the fantastical and spiky structure designed for St Pancras station in the mid-1860s by George Gilbert Scott, one of the best-known architects of the Gothic Revival. St Pancras consists of two major structures, Scott's wildly exuberant hotel and the train shed behind it designed by the engineer W. H. Barlow (1812–1902) for the Midland Railway. Both are monuments to High Victorian design. The train shed, a soaring structure of iron and glass with a span of 73 metres, was built between 1863 and 1867 and is one of the greatest glories of Victorian engineering. Its pointed arches convey a sense of Gothic lightness without being consciously imitative of Gothic form. Stretching across the front of the shed is Scott's massive, red-brick station hotel. At King's Cross the head building reflected the form of the sheds behind it; at St Pancras, the hotel provides no indication of the form, or even of the presence, of Barlow's vast iron and glass shed behind. Tradition has it that at St Pancras Scott was finally able to realize the vision he had been deprived of earlier when he had been forced to abandon his Gothic plan for the Foreign Office in Whitehall and to substitute a design in a classical idiom. At St Pancras, Scott pulled out all the stops. The hotel is an enormous structure, considerably larger than the one he had been asked to design. Some critics have deplored it, but no matter what one



Above and left: Detail and general view of St. Pancras Station. Both exhibit the exuberance of the Gothic Revival ornamentation employed by the architect.

may think of it, once seen, it is an unforgettable building. It dominates the entire skyline for miles around, looking in the London twilight like some fantastic vision of an Arthurian Camelot. Its details are eclectic, with more than just hints of French and Flemish Gothic. Its great clock tower and entrance, as well as the clusters of gables and pinnacles at its southwest extremity, look like so many medieval Flemish guildhalls drawn together and dropped down in the middle of 19th-century London. The exuberance of the building's decoration is one of its greatest visual attractions—wonderfully varied, wildly imaginative. The station is under renovation, and cleaning has revealed the brilliant contrasts of colour in the façade, formerly dulled and obscured by the accumulation of layers of grime. St Pancras is an eminently joyful structure, a visual celebration of all the bustle of the Victorian age.

St Pancras station provides a memorable glimpse of the achievements of the Gothic Revival in secular architecture and in engineering. A few blocks away, in Gordon Square there is a Gothic Revival structure that is proof of the ambitions of Victorian Gothic Revival architects in the service of religion. The building in question, now dedicated to Christ the King, serves as Anglican chapel to the University of London, but it was originally designed for the extraordinary religious body known as the Catholic Apostolic Church, founded in the late 1830s by Edward Irving (1792–1834). The ritual of the Irvingite churches was highly involved, and their liturgy complex in its appurtenances. For a full Irvingite service, no fewer than sixty-four individuals were required in the sanctuary and

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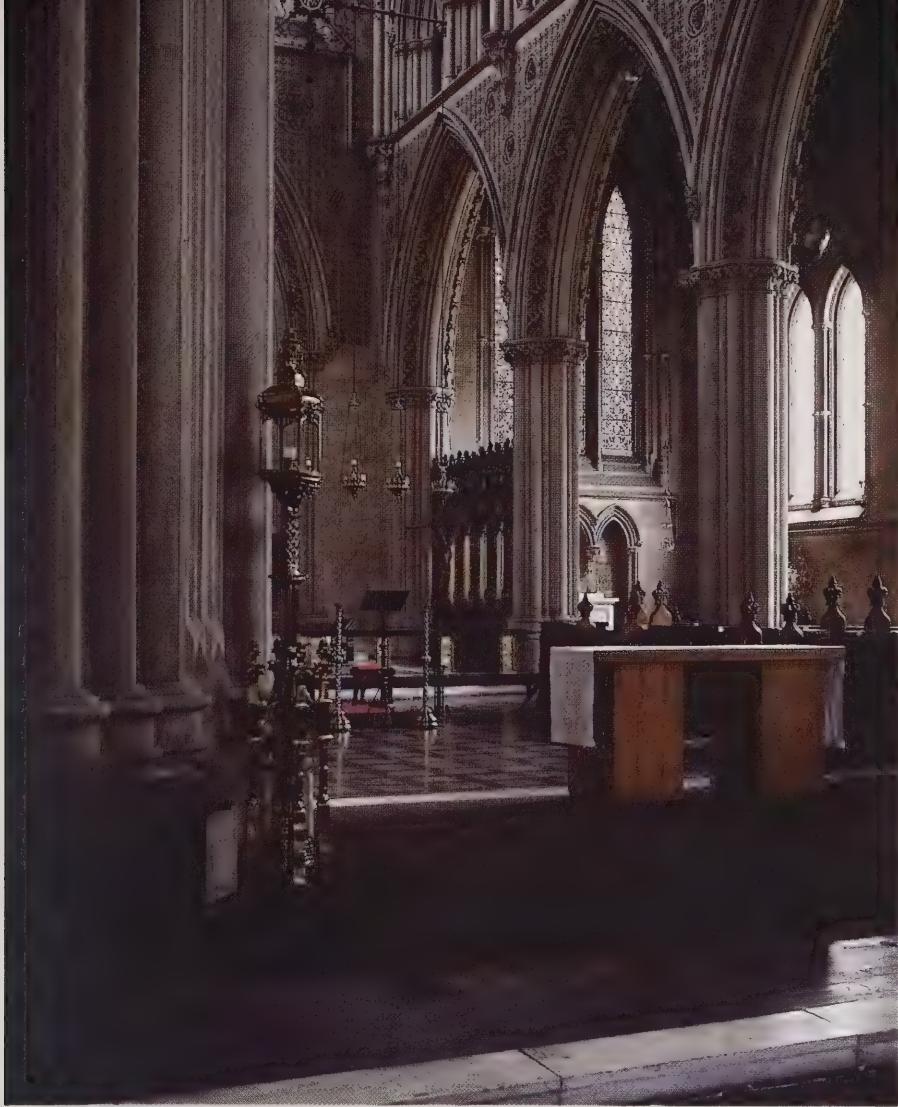
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University Chapel of Christ the King, in Gordon Square.



chancel; these features of the church in Gordon Square were therefore of ample proportions. The whole structure, in fact, was of immense size, and of dimensions that would not be inappropriate for a cathedral. When it was built in the early 1850s to the plans of Raphael Brandon, it was considerably larger than any new Gothic Revival church anywhere in London; its vaults are only slightly lower in height than those of the nave of Westminster Abbey.

The interior of the church is its more impressive part; the exterior is marred by the truncated stump of a central tower that was never completed to its intended full height. The interior shows some differences in decoration from other Gothic Revival structures of the period. At the foot of the chancel are the original brass stands for the oil lamps that were used by the Irvingites instead of candles. They are of considerable size and richness, and add a warm metallic glow to the interior. To the glitter of polished brass are added the warm tones of stained glass, a reminder of the various decorative arts whose development was spurred by the Gothic Revival in architecture.

The church in Gordon Square allows us a study in contrasts, for it is not far from one of London's best-known Greek Revival churches, that of St Pancras (1819–22), designed by William and H. W. Inwood, and incorporating, among other features, a caryatid porch based on that of the Erechtheum at Athens, an Ionic portico, also copied from the Erechtheum, and a tower combining copies of the Temple of the Winds, set one upon the other. It seems astonishing that just slightly over thirty years from the consecration of St Pancras church, an edifice like the Catholic Apostolic Church should rise up only a few blocks away. Yet that fact in itself is a measure of the strength and vitality of the Gothic Revival movement in Victorian London, whose impact even the turbulent 20th century has not been able greatly to diminish.

K. Corey Keeble, a frequent contributor to Rotunda, is associate curator in the European Department of the ROM. After graduating from United College (now the University of Winnipeg), he did postgraduate work for two years at the Courtauld Institute of the University of London, England. Although Mr Keeble now concentrates on the study of Renaissance and Baroque bronzes and terracottas, his wide-ranging interests embrace many periods of architectural history.

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► The Iroquois carved both ceremonial and utilitarian objects in wood and stone for hundreds of years. Their distinctive style is perhaps best exemplified in the distorted features of False Face Society masks and in their delicate and often fanciful soapstone pipes. (See Daniels, Peta. "A Certaine kind of Herbe". *Rotunda* 13:2 [Summer 1980])

In 1969 there began to emerge a modern Iroquoian school of steatite, or soapstone, carving which drew upon traditional skills to create new sculptural forms in a contemporary style. Primarily three-dimensional in composition, these carvings often use their visual images to interpret and recreate the myths and traditional stories of the Iroquois. Common figures in the carvings include False Face masks, wampum belts, turtles, snakes, turtle-shell rattles, corn, and numerous clan symbols, as well as other spiritual figures. The eagle is a frequent subject for sculpture because of its sacred importance among the Iroquois.

The Ethnology Department has recently acquired its first contemporary Iroquois carving, a golden eagle sculpted by Ben Thomas, a Mohawk from the Six Nations Reserve in Brantford, Ontario. Carved in 1984 from a light brown steatite excavated in Maryland, the sculpture was sanded and smoothed over its entire surface, then stippled in certain areas to create a textured effect. The remaining smooth surfaces represent the eagle's feathers.

Traditionally, carvers do not receive formal instruction. Many artists learn their skills from a relative or friend who patiently guides them in their endeavours. Sculptures are generally executed without preliminary sketches, with the artist focusing on releasing the forms already inherent in the stone.

V.G.

► A crazy quilt, found in an antique shop in Michigan and brought back to Ontario, was recently given to the ROM by Julie Siegel. The quilt was probably made during the First World War. Each quilt block contains a wool felt pennant relating to the involvement of Britain and some of her allies during the war. The fabrics surrounding each pennant are pieced together to form a crazy quilt, a popular quilt form in the late 19th and early 20th centuries.

This quilt is important on several levels. Perhaps most obvious is its historical significance, especially as a Canadian piece. Not only does it depict Canada's



THE GROWING COLLECTIONS

support of Britain during the war with its two pennants "Canada with the Empire, the Maple Leaf Forever", and "Canada with the Motherland", but it also shows the great spirit of patriotism behind the war effort of that period. The quilt is of further interest because it illustrates the creation of an attractive utilitarian object from available materials—a longstanding Canadian tradition in quiltmaking.

We do not know exactly where the quilt was made, or by whom; however, the preponderance of tartans and the presence of a pennant of Scotland suggest that the maker was perhaps of Scottish ancestry.

A.D.H.



► The Department of Invertebrate Palaeontology recently purchased several fine display specimens at the Detroit Gem and Mineral Show. Of particular interest is a large (35 cm) ammonoid cephalopod of Middle Devonian age (370 million years) from Morocco. The outer surface has been polished away to reveal the chambered interior of the shell filled with multi-coloured limestone and calcite crystals. This specimen is from the same locality as the two polished slabs, showing many smaller cephalopod shells, on display in the invertebrate fossils gallery.

J.W.

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Art Gallery of Ontario
April 13 - May 19, 1985

Winnipeg Art Gallery
June 8 - July 21, 1985

Art Gallery of Greater Victoria
August 8 - September 15, 1985

A comprehensive 168-page publication accompanies the exhibition. Features over 200 black and white photographs and eight colour plates. Available for \$18.95 from the Glenbow Shop.

Glenbow Museum 130 - 9 Avenue S.E., Calgary, Alberta T2G 0P3 (403) 264-8300

► The West Asian Department has acquired its first signed Persian painting, an illustration from a Shah Nameh (Book of Kings), by the painter Mu'in, who flourished during the mid-17th century. In it is depicted the Persian Hercules-like hero, Rustam, saving himself from a boulder cast down by his enemy, Bahman, by kicking it away. At his left lie his famous ox-head mace, shield, and quiver. Rustam's son, Zavareh, urges his father to flee, but the unflappable hero refuses to interrupt the preparation of his supper—barbecued wild ass!—or even to put down his cup of wine. The artist is also known for his realistic sketches of contemporary life, his fine drawings of moustached men, and his sensitive depictions of animals. Because this is an illustration, however, it is much stiffer, reflecting the traditional mode of Persian miniature painting.

L.G.



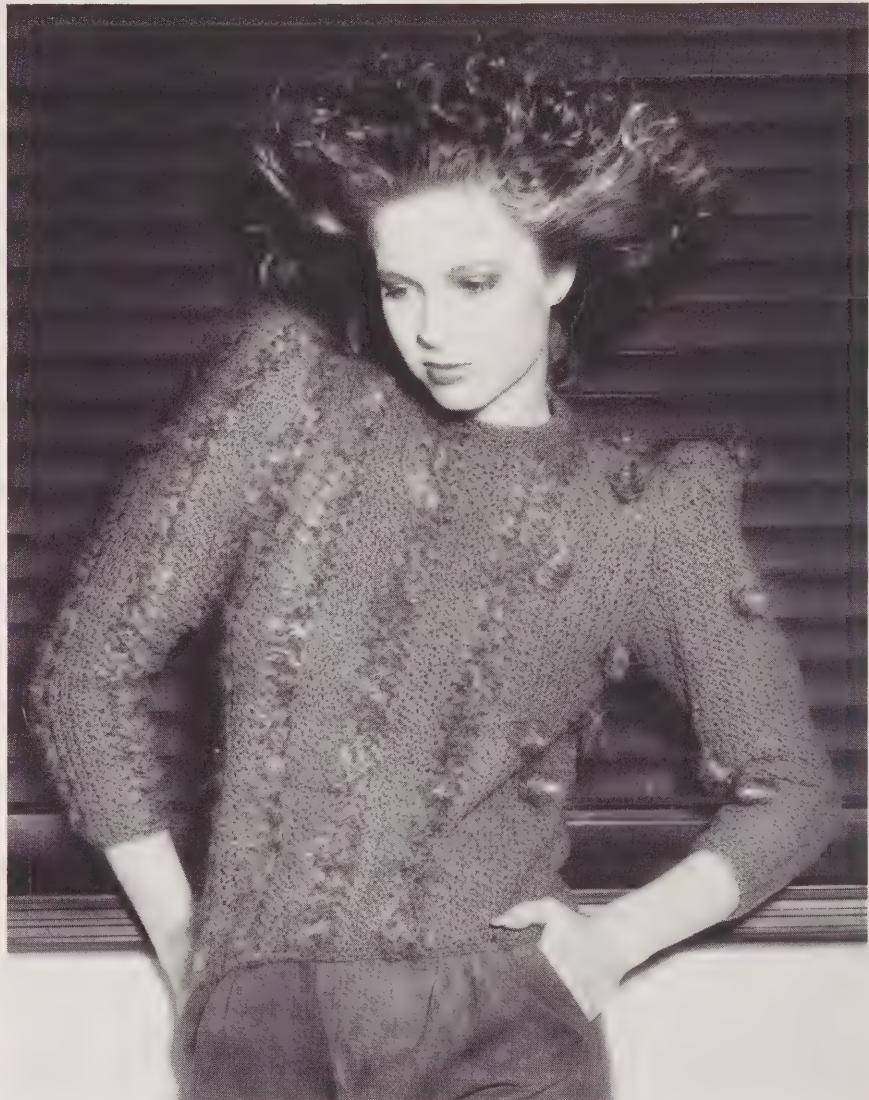


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—RECENT AND FORTHCOMING PUBLICATIONS—

Greek and Italian Black-Gloss Wares and Related Wares in the Royal Ontario Museum

ROM, John W. Hayes, 204 pp., \$45.00 paper

This new publication catalogues the ROM's collection of Greek and Italian black-gloss wares and related wares from the central and eastern Mediterranean regions, dating from the 6th to the 1st century B.C. All of the 295 entries are illustrated with photographs throughout the text; 16 composite line drawings of the objects appear at the end of the text. Fully indexed.

Etruscan and Italic Pottery in the Royal Ontario Museum: A Catalogue

ROM, John W. Hayes, publication date: Spring 1985

Continuing the series of detailed catalogues of the Greek and Roman collections, this new publication embraces Etruscan and Italic *impasto* and *bucchero* wares, and various classes in non-Greek and non-Roman styles. The work contains 369 entries illustrated with photographs throughout and 13 composite line drawings at the end of the book. Fully indexed.

Glimpses of Excellence: A Selection of Greek Vases and Bronzes from The Elie Borowski Collection

ROM, Neda Leipen with Paul Denis, Robert Guy, and Arthur D. Trendall, 48 pp., ill. \$5.00 paper

This catalogue accompanies the special exhibition of the same name on view at the Royal Ontario Museum, 18 December 1984–30 June 1985. 44 descriptive entries; 100 black-and-white photographs.

Excavation at Fengate, Peterborough, England: The Fourth Report

ROM Archaeology Monograph 7, Francis Pryor, 302 pp., ill.
\$45.00 paper

Brachiopoda and Biostratigraphy of the Silurian-Devonian Delorme Formation in the District of Mackenzie

ROM Life Sciences Contribution 138, David G. Perry, 243 pp., ill.
\$17.50 paper

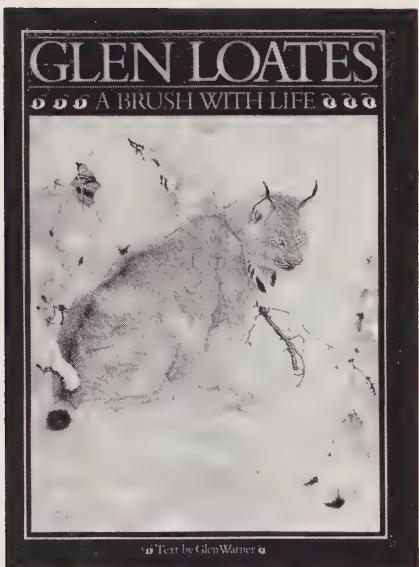
The Status of *Smilodontopsis* (Brown, 1908) and *Ischyrosmilus* (Merriam, 1918): A Taxonomic Review of Two Genera of Sabretooth Cats (Felidae, Machairodontinae)

ROM Life Sciences Contribution 140, C.S. Churcher, 59 pp., ill.
\$6.50 paper

Royal Ontario Museum Thirty-Fourth Annual Report (1983–84)

Museum members who wish to obtain a copy of the Thirty-Fourth Annual Report (1983/84) can do so by contacting Membership Services (978-3704).

ROM publications may be obtained from the ROM Shop, or by mail order from Publication Services, Royal Ontario Museum.

**Glen Loates: A Brush With Life**

Text by Glen Warner
Prentice-Hall Canada Inc.
192 pp. \$50.00 (cloth)

Review by Anker Odum,
artist/illustrator in the Exhibit
Design Department of the ROM.

"Wildlife art" is today a household phrase. Across the continent art galleries cash in on original wildlife art and on limited- and unlimited-edition prints of wildlife subjects. In the early 1960s, however, when Glen Loates began his career in this field—as he tells us in *Glen Loates, A Brush With Life*—"there certainly wasn't a wildlife market. There was barely a wildlife field." This handsome book follows Loates and his art through almost a quarter of a century, from his early struggle to discover which branch of art would best express his personality and philosophy, to the Glen Loates we know today, a mature artist whose paintings and drawings of nature and its creatures display finely honed techniques and an incredibly delicate touch.

The illustrations in the book consist of excellent reproductions of Loates's art exquisitely presented and ranging from sketches, studies, and drawings—the latter skilfully interwoven with the type matter—to full colour plates. As you open the book, you immediately encounter fine colour plates of bird paintings, which transform the usually strictly functional preliminary pages into veritable works of art, partly because of Loates's own artistry, but partly also because the book designer obviously has an intimate knowledge and understanding of Loates's art.

The text section, well written and researched by Glen Warner, is printed on a light grey stock and is interspersed with an abundance of pen and pencil drawings, ranging from swiftly sketched outlines of birds and mammals to detailed, finished studies of the creatures. The text itself gives a clear, chronological account of Loates's career, from his early struggles (and early successes)

to the fully developed artist of today. It tells of people who influenced and helped him—such as Fred Brigden and Gene Aliman, then art director of *The Canadian*—and of how he wavered for a time between becoming a draughtsman of animated cartoons and following a more serious approach to nature art. It chronicles both the artist's triumphs and disappointments, and reveals that in 1982 Loates presented his life-size painting of the bald eagle to President Reagan as a gift from the Canadian people, an event that received remarkably little publicity in Canada at the time. The last chapter portrays Loates today. Besides telling of his day-to-day life and his method of working, it also offers excellent insights into the man and his philosophy.

First and foremost, however, *Glen Loates, A Brush With Life* is a book of pictures, a cross-section of the artist's work through the years. In addition to the more familiar aspects of his art, it offers a number of surprises: for example, two "Jug Studies", thoroughly modern in style, painted when Loates was fifteen years old; a semi-abstract painting, "The Aristocrat", with a flavour of Toulouse-Lautrec rendered in a sort of expressionistic cubist style; and a pair of animated cartoon preliminaries. Another surprise is a series of pewter sculptures of endangered animals commissioned by the Audubon Society for its seventy-fifth anniversary, demonstrating the versatility of Loates's artistic gifts.

The main feature of the book, of course, is the many colour reproductions of Loates's art from the early paintings of wild flowers that launched his career in *The Canadian* to the painting just recently presented to President Reagan. This latter is accompanied by numerous sketches, studies, and paintings of eagles, done over a period of years, that constituted the preparatory work for this great painting of America's national symbol. As one leafs through the colour plates, one is struck by the exquisite delicacy of the paintings of wild life in its natu-

— BOOK REVIEWS —

ral settings, each flower and leaf being treated as sensitively and as meticulously as the main subject. Outstanding among the colour plates are those of barn swallows hawking mayflies against a cloudy spring sky; of a Canada warbler perched with flicking wings on the stem of a beautifully painted jack-in-the-pulpit; and the "pumpkin patch" spread, a brilliant rendering of a field of bright yellow-orange pumpkins with a huge flock of starlings rising against a hazy autumn sky. Another outstanding spread, though not in colour, is a pencil rendering of a chilly March landscape with common crows—one close up—banking against the leafless trees.

The last section of colour plates gives, at first glance, the impression of being without colour. On closer examination, however, they are seen to be very delicately tinted drawings reminiscent of old etchings. These are a series of birds from a limited-edition book, *A Coming of Winter*. By means of an intricate reproduction technique invented by his brother Bernard, Loates has captured vividly the mood of winter accentuated by the presence of the hardy birds that remain with us through the bitter months.

Loates's latest achievement, a life-size painting of a Siberian tiger commissioned by the Electrolux Corporation, is not included in the book, since it was not completed at the time of the book's publication. Both it and the painting of the bald eagle, however, will be included in the exhibition of Loates's work that opens at the Royal Ontario Museum on 15 February 1985.



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The Magnetic North

Mike Beedell
Oxford University Press
131 pp. \$24.95 (cloth)

Review by Brian Molyneaux, research associate with the Department of New World Archaeology and a photographer whose work has been recently shown at the National Gallery of Canada and the Art Gallery of Ontario.

Like the desert, the vast, open landscape of the Arctic overwhelms those who try to picture it. The eye is magnetically drawn to things that stand out against the monochromatic expanses of snow or tundra, giving them an almost iconic significance. The visitor's impressions of the people who live here outside the protective sphere of government or industry—the original Inuit and Athapaskan inhabitants and the non-native peoples—are no less influenced by this sense of isolation. To southern eyes, all this life seems balanced on the edge of survival. Against this romantically charged background, photographers have to work hard to avoid the temptations of the heroic and the picturesque. Because the environment is so inaccessible for much of the year, however, it is usually not possible to go beyond these superficial impressions.

Photographer Mike Beedell is more fortunate than most. He is a professional adventurer with a good eye for photography who has spent a number of years travelling the north, hiking, climbing, and canoeing to places rarely seen by outsiders. One hundred and twenty-five photographs have been assembled in the *The Magnetic North*, beautifully reproduced by Oxford University Press.

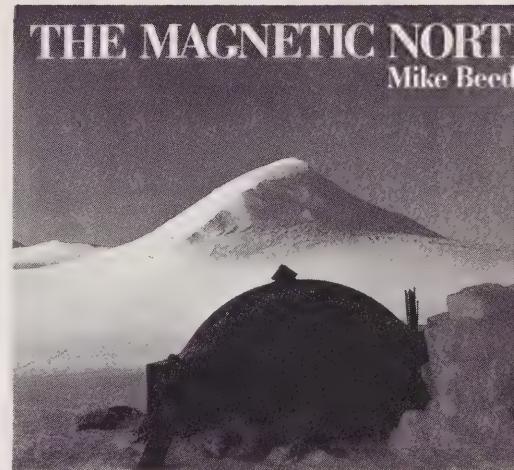
The book gives a host of impressions of the past and the present of the north: the Inuit with snowmobiles and dog teams, archaeological remains in the tundra and modern communities, abandoned oil camps and current drilling sites in the Beaufort Sea. The ubiquitous polar bear has not been overlooked;

neither have the caribou and other animals. Above all, there is the dominating form of the landscape: mountains, tree-lined tundra, and snow, set against the colourful Arctic skies. Each photograph has a caption which usually provides background for the images rather than simple description, and so enhances the reader's understanding of unfamiliar ground.

Although it may be difficult to distinguish Beedell's approach in this book from a show of someone's best colour slides, he does provide the viewer with moments of sensitivity and insight. His pictures of people are straightforward; the subjects appear unaffected by his camera, even when he has obviously posed them to get an interesting composition. And there are unconventional subjects and views that he has worked hard to get: the massive front paws of a polar bear, an Inuk hunter sighting down a rifle, the flare pit of a gas well in the Beaufort Sea, the butchering of a narwhal.

Many of the views of the environment capture ephemeral moments of the beauty that can only be seen by someone who has lived in the Arctic, since the spring, summer, and fall are compressed into little more than three months. Although anyone who waves a camera could record the striking form of Mt Asgard in Auyuittuq Park, Baffin Island, or a line of black spruce trees silhouetted against a golden sunset, only the dedicated photographer is usually ready to catch sunshowers in the high mountains of the Yukon or the image of sled dogs braced against a winter wind, with the sky and snow in bands of mauve and red and a sliver of moon in the distance.

In spite of these and other individually compelling images, however, Beedell's strong sense of conventional aesthetics prevents the viewer from seeing more than the picturesque, even though it may possess a cold beauty. Everything is clean, unremittingly beautiful, and positive. Even the narwhal-butcherings images seem like studies in form and colour. Indeed, the image of the



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BOOK REVIEWS

famous Arctic film-maker Robert Flaherty's Inuit son, cleaning a narwhal tusk, is so beautifully composed and coloured that it could have been taken by a reincarnated Edward Curtis.

Since Beedell has not photographed with any specific theme in mind, the book has a precise formal design that appears to be meant to compensate for the lack of internal cohesion. A rhythm has been set up by placing images with similar form or subject on facing pages. Such visual punning is successful when it provokes a further impression, like the use of photomontage in classic films: a rounded glacial boulder, perched on a snow-covered hill, and the walruses lying on an ice-floe look as though they come from the same mysterious Arctic mould. More often, however, the intent is too obvious, as moonlight on Great Bear Lake faces moonlight on Great Slave Lake, sunshower faces sunshower, and derelict oil camp faces derelict village, creating a kind of two-step dance throughout.

There is nothing wrong with capturing the picturesque beauty of the north and its people: most of the readers and viewers of this book will never have the opportunity to see it first-hand. But if the viewer wants something beyond a transitory impression, it is still there, undiscovered, on the tundra. The introduction to this book, by the filmmaker Bill Mason, concentrates on revealing Mike Beedell as an amiable and slightly off-beat adventurer who loves the north, as if we should keep this in mind when we look at the photographs. The reader, however, might prefer to think of Beedell's subjects, the many people who live in this challenging environment full-time and who are probably too busy with life to consider it as an adventure.

Beedell has worked hard to capture the spirit of the Arctic in his images; he has a good-natured and positive approach, with an obvious affection for his craft and for the beauty of the people and the land. He has simply failed to think as much as he has travelled.



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Handbook of Canadian Mammals: Volume 1, Marsupials and Insectivores

C. G. van Zyll de Jong,
National Museums of Canada
210 pp. \$19.95 (paper)

Review by Susan M. Woodward,
curatorial assistant in the
Department of Mammalogy, ROM.

Most of us are familiar with a limited number of mammals, particularly large ones and those that thrive in our own urban environment. The majority of mammals, however, are not to be found in cities; nor are they easily observed in their natural habitats, partly because of their small size and reclusive habits. Moreover, to the casual observer of outward appearances many species are easily confused with one another. A reliable guide is often essential for positive identification, using external and skull characteristics.

The *Handbook of Canadian Mammals, Volume 1*, the first of a series, consolidates information hitherto available only from widely scattered sources. This first volume covers the two most primitive orders of mammals found in Canada. The marsupials are represented by a single species of opossum, while the insectivores include twenty-two species of shrews and moles.

The book is organized in a hierarchical manner based on the classification of mammals proposed by the biologist G. G. Simpson. While the morphology and lineage of each order and genus is usually described, the bulk of the text consists of information about the individual species. The keys provided permit the identification of species by external and/or skull characteristics. Coloured drawings of most species are presented together at the beginning of the book.

Each species is listed under its scientific name, and English and French common names are given. A feature I particularly like is the inclusion of the meaning of the Latin or Greek roots used in the scientific

name, because these roots frequently refer to key characteristics of the species—a useful aid to memory.

Each species section consists of a number of subsections and is preceded by an introduction giving synonyms for the scientific name, the type locality, a table of external, weight, and cranial measurements, skull drawings, and a species description that includes comparisons with similar species. There is a map of the species' distribution, followed by a list of localities delineating the periphery of its distribution in Canada and a brief description of its distribution outside Canada.

In the systematics subsection the taxonomic status is presented, as well as geographic variation, subspecies, karyotype, and fossil evidence. The subsection entitled "Biology" presents information on habitat, food, associated mammals, predators, parasites, populations (with details of age classes, sex ratio, home range, population densities, and longevity), and behaviour (including activity pattern, vocalization, the senses, mating behaviour, locomotion, and social behaviour). The final subsection is entitled "Reproduction and Ontogeny".

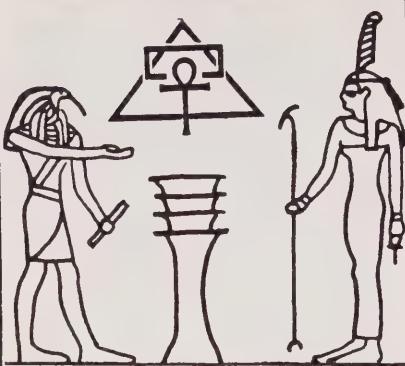
Dr van Zyll de Jong has spent many years studying shrews and his personal observations of many of the species provide considerable insight into his subject. He indicates where further research is needed to fill voids in our knowledge of each species' biology. The book is written clearly, concisely, and in a well-organized fashion. Although specialized terminology is used, the glossary provides definitions for most of the terms. Subtitles in the margin of the biology subsections permit easy access to information required. My only major criticism of the book is that no scales are given for the illustrations of the species or for the skull drawings.

Although this book will not replace existing field guides, its content and method of presenting information make it a valuable reference for professional biologists, students, and serious naturalists alike.

Handbook of Canadian Mammals



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BOOK REVIEWS

Cornerstones of Order: Courthouses and Town Halls of Ontario, 1784–1914

Marion MacRae with Anthony
Adamson
Clarke Irwin
283 pp. \$45.00 (cloth)

Review by K. Corey Keeble, associate curator in the European Department of the ROM.

Cornerstones of Order outlines the historical and stylistic evolution of Ontario courthouses and town halls from the rudimentary squared-log structures of the late 1700s and early 1800s to the imposing neoclassical, neo-romanesque, and neo-mannerist structures erected by enterprising communities throughout the province of Ontario up to the beginning of the First World War. This is a fascinating book, an excellent blend of social and architectural history, combined with a lavish array of colour plates, black-and-white photographs, line drawings, elevations, and maps. While dealing with buildings in Ontario, the text quite properly and admirably relates Ontario architectural styles to broader, international trends, of which the Ontario manifestations are a reflection in microcosm.

The pioneer conditions of early Ontario demanded utility rather than grandeur in the earliest structures designed to serve as courthouses: they were patterned after squared-log blockhouses, used by the military in fortifications. These form an important part of the MacRae-Adamson study. Details of some of them—the Eastern District courthouse of about 1795 and the New Johnstown and Gore District courthouses of somewhat later years—are included in the form of floor plans and elevations.

The greater stability—political, economic, and social—in Ontario after the War of 1812 provided opportunities for something more ambitious, buildings whose stone construction and ornament proclaimed that they were designed with a view not only to permanency but to symbolic function as well. The Nia-

gara District courthouse of 1816–18, though small, was an impressive structure of stone and brick, with blind arcading in neoclassical style, a building impressive in its harmonious proportions and appearance of restrained elegance. Such structures of the first third of the 19th century—a Canadian counterpart of the vernacular brick architecture of the British Isles of the later years of the reign of George III and of the Regency—were dignified proclamations of the advancement of culture and civilization in the New World (in European terms) and of nature tamed and corrected by the hand and mind of man.

By the 1820s the first professional architects had begun to appear in Ontario, translating English neoclassical styles into an adaptable idiom suited to the building needs of the rapidly growing towns of Upper Canada. From this period began the conscious design of courthouses and town halls as expressions of civic pride, monuments to the economic prosperity and growth of the communities that erected them. As an indication that some communities had progressed beyond the log-cabin stage, the 19th century saw a flurry of architectural competitions for town halls, such as the one in Kingston in 1841, where no fewer than thirteen designs were submitted.

Most of the courthouses and town halls built in Ontario in the early and middle years of the 19th century were designed in some manner of neoclassical style. A new Gore District courthouse of the late 1820s featured a Palladian façade with attached columns and triangular pediment; similar pedimented porticos were to appear on the façades of the Brockville courthouse of the 1840s and—in more robustly articulated form—of the city hall in Kingston of the early 1840s.

Classical modes for town halls and courthouses remained the most popular until late in the 19th century, but for a short period in Upper Canada there was limited vogue for courthouses in castellated, mock-

medieval style, a reflection of popular flirtations with the Gothic Revival. The results in the courthouse designs were by the standards of an A. W. N. Pugin somewhat lacking in authenticity, but the best examples have considerable charm and even the worst the appeal of an eccentric picturesqueness.

By the middle years of the 19th century, civic architecture had reached a stage of formal sophistication in Upper Canada which is appropriately described in *Cornerstones of Order* as the "Grand Manner". Among the most imposing monuments of this period were Toronto's Osgoode Hall (which had been considerably embellished since its first phases of construction in the early 1830s), a masterpiece of Palladian classicism; the St Lawrence Hall in Toronto, designed by William Thomas and opened to the public in 1850; and Kivas Tully's opulent Victoria Hall in Cobourg, opened in 1860. These structures are effulgent documents of the wealth, confidence, and soaring ambitions of mid-Victorian society in Upper Canada, and testify in addition to the growing number of skilled artists and craftsmen who were available in Ontario's burgeoning urban communities by the mid-1800s.

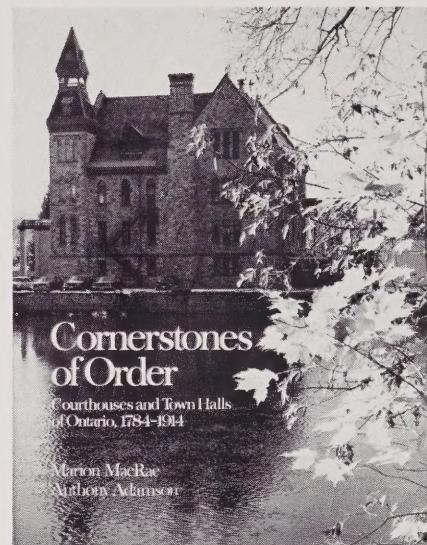
During the second half of the century, beaux-arts classicism developed alongside a wide variety of other styles, ranging from vaguely neo-mannerist and neo-baroque to wildly eclectic. Neo-French Renaissance styles proliferated in the 1870s, nowhere as exuberantly as in the mansard roofs and dormers of the old Ottawa town hall. One of the most delightful structures of this period illustrated in *Cornerstones of Order* is the town hall in Barrie, enlarged in the late 1870s, and renovated with the addition of mansard roofs, clusters of spiky decorative iron work, and groups of chimney stacks, all of which obscured the plainer features of the original town hall.

The Romanesque revival of the late 1800s is well documented, with good illustrations of Toronto's third city hall of 1898, and of a number

of interesting, less well-known structures such as the Oxford County buildings at Woodstock, and George Gouinlock's St Mary's town hall, a highly individual interpretation of the prevailing Richardsonian style. In the midst of all this late 19th-century Richardsonian Romanesque styling, it is a genuine surprise to encounter, in the form of a line drawing, the façade of the Orillia town hall in French Renaissance style, looking for all the world like a transplant from the Loire Valley.

While major architectural monuments are dealt with in detail, more modest structures are included in profusion, some of startling simplicity like the little frame neoclassic schoolhouse at Sutton, which doubled from time to time as a township hall. Even with these austere structures in Ontario's smaller communities, the Victorian penchant for lily-gilding proved irresistible, as shown in the lacy bargeboards and ogee mouldings of the township hall at Sophiasburg and in the diminutive portico and lantern of the little township hall at Ancaster.

Cornerstones of Order is not only a wonderfully written and illustrated architectural history, it is also a guidebook to some of the most interestingly variegated buildings in the province of Ontario. Its function as an illuminating and engaging Ontario architectural cicerone is amplified by the judiciously designed pages of "commentary" at the end of the main text, with a glossary of architectural terms illustrated with line drawings of specific period styles as represented in particular Ontario courthouses and town halls. It is a thoroughly pleasurable introduction to a very important field of Ontario domestic architecture, and an indispensable one for any serious student of the architecture of this province.



INDEX TO VOLUME 17

Authors

Cruise, James E.; A Salute to the Bishop White Committee; Vol. 17, no. 3:5
Cselenyi, Ladislav; Gallery Glimpses: The Musical Instruments Gallery; Vol. 17, no. 3:43
Edmund, Gordon; Dinosaur Bones in the Chihuahua Desert: A new field of exploration; Vol. 17, no. 4:35
Gotwald, William H., Jr; Death on the March: Army ants in action; Vol. 17, no. 3:37
Hood, Adrienne; Early Canadian Quilts: Marriage of art and utility; Vol. 17, no. 3:28
Howarth, Thomas; Mackintosh Furniture at the ROM: A unique acquisition; Vol. 17, no. 4:6
Irwin, Sara; Tobacco in China: Golden-thread-smoke and bottles of snuff; Vol. 17, no. 1:34; The Jews of Kaifeng: An ancient Chinese community; Vol. 17, no. 2:19
Keeble, K. Corey; Sansovino's Loggetta: Focal point of Venetian grandeur; Vol. 17, no. 1:14; Gallery Glimpses: The European Gallery; Vol. 17, no. 1:40; Victorian London and the Gothic Revival: Some highlights; Vol. 17, no. 4:40
Loten, H. Stanley; Marcahuamachuco: Dynastic architecture before the Inca; Vol. 17, no. 4:21
Pendergast, David M.; More Treasures from the Hunchback Tomb: Carved bones from Lamanai; Vol. 17, no. 3:46
Phillips, Ruth Bliss; Patterns of Power: Early Indian Art of the Great Lakes; Vol. 17, no. 3:16
Redford, Donald B.; Heretic Pharaoh: The Akhenaten Temple Project; Vol. 17, no. 3:8
Rogers, Edward S.; Paul Kane and the Spirit Chief of Norway House; Vol. 17, no. 2:34
Russell, Loris S.; Bringing Them Back Alive: The artistic representation of prehistoric animals; Vol. 17, no. 2:12
Shaw, Joseph W.; Minoan Kommos: A harbour town of ancient Crete; Vol. 17, no. 1:24
Starink, Edith; Two Spanish Albs: Ecclesiastical haute couture; Vol. 17, no. 3:49
Stephen, Barbara; From the Collections: A new gallery at the ROM; Vol. 17, no. 1:3
Topham, John; Traditional Crafts of Saudi Arabia; Vol. 17, no. 2:6
Tsang, Ka Bo; Touhu: An ancient Chinese game; Vol. 17, no. 3:24
Waddington, Janet; Amber: Golden legacy of time; Vol. 17, no. 4:11
Webster, Donald B.; Georgian Canada: Conflict and Culture: A bicentennial exhibition; Vol. 17, no. 1:6
Young, David A.; Touring Ontario's Museums: Marine Museum of the Great Lakes at Kingston; Vol. 17, no. 2:26
Zingg, Jeannette; Georgian Dance: Elegance in motion; Vol. 17, no. 2:4

Titles

Amber: Golden legacy of time; Janet Waddington; Vol. 17, no. 4:11
Book Reviews: *Ancient Maya Civilization*, Norman Hammond; review by David M. Pendergast; Vol. 17, no. 1:53; *Overlay: Contemporary Art and the Art of Prehistory*, Lucy R. Lippard; review by Brian Molyneaux; Vol. 17, no. 1:54; *The Potters' View of Canada: Canadian Scenes on Nineteenth-Century Earthenware*, Elizabeth Collard; review by Donald Webster; Vol. 17, no. 2:53; *Masterpieces of Architectural Drawing*, Helen Powell and David Leatherbarrow, eds.; review by K. Corey Keeble; Vol. 17, no. 2:54; *Toronto in Art: 150 Years through Artists' Eyes*, Edith G. Firth; review by K. Corey Keeble; Vol. 17, no. 3:59; *Canadian Folk Art: Old Ways in a New Land*, Michael Bird; review by Bette Shepherd; Vol. 17, no. 3:63; *Glen Loates: A Brush with Life*, text by Glen Warner; review by Anker Odum; Vol. 17, no. 4:56; *The Magnetic North*, Mike Beedell; review by Brian Molyneaux; Vol. 17, no. 4:59; *Handbook of Canadian Mammals 1: Marsupials and Insectivores*, C. G. van Zyll de Jong; review by Susan Woodward; Vol. 17, no. 4:60; *Cornerstones of Order: Courthouses and Town Halls of Ontario, 1784–1914*, Marion MacRae and Anthony Adamson; review by K. Corey Keeble; Vol. 17, no. 4:62
Bringing Them Back Alive: The artistic representation of prehistoric animals; Loris S. Russell; Vol. 17, no. 2:12
Death on the March: Army ants in action; William H. Gotwald Jr; Vol. 17, no. 3:37
Dinosaur Bones in the Chihuahua Desert: A new field of exploration; Gordon Edmund; Vol. 17, no. 4:35
Early Canadian Quilts: Marriage of art and utility; Adrienne Hood; Vol. 17, no. 3:28
From the Collections: A new gallery at the ROM; Barbara Stephen; Vol. 17, no. 1:3
Gallery Glimpses: The European Gallery; Vol. 17, no. 1:47; The Musical Instruments Gallery; Vol. 17, no. 3:43
Georgian Canada: Conflict and Culture: A bicentennial exhibition; Donald B. Webster; Vol. 17, no. 1:6
Georgian Dance: Elegance in motion; Jeannette Zingg; Vol. 17, no. 2:4
Growing Collections, The; Vol. 17, no. 1:47, no. 2:40, no. 3:53, no. 4:51
Heretic Pharaoh: The Akhenaten Temple Project; Donald B. Redford; Vol. 17, no. 3:8
Jews of Kaifeng, The: An ancient Chinese community; Sara Irwin; Vol. 17, no. 2:19
Mackintosh Furniture at the ROM: A unique acquisition; Thomas Howarth; Vol. 17, no. 4:6
Marcahuamachuco: Dynastic architecture before the Inca; H. Stanley Loten; Vol. 17, no. 4:21
Minoan Kommos: A harbour town of ancient Crete; Joseph W. Shaw; Vol. 17, no. 1:24
More Treasures from the Hunchback Tomb: Carved bones from Lamanai; David M. Pendergast; Vol. 17, no. 3:46
Patterns of Power: Early Indian Art of the Great Lakes; Ruth Bliss Phillips; Vol. 17, no. 3:16
Paul Kane and the Spirit Chief of Norway House; Edward S. Rogers; Vol. 17, no. 2:34
Recent and Forthcoming Publications; Vol. 17, no. 1:51, no. 4:55
Salute to the Bishop White Committee, A; James E. Cruise; Vol. 17, no. 3:5
Sansovino's Loggetta: Focal point of Venetian grandeur; K. Corey Keeble; Vol. 17, no. 1:14
Tobacco in China: Golden-thread-smoke and bottles of snuff; Sara Irwin; Vol. 17, no. 1:34
Touhu: An ancient Chinese game; Ka Bo Tsang; Vol. 17, no. 3:24
Touring Ontario's Museums: Marine Museum of the Great Lakes at Kingston; David A. Young; Vol. 17, no. 2:26
Traditional Crafts of Saudi Arabia; John Topham; Vol. 17, no. 2:6
Two Spanish Albs: Ecclesiastical haute couture; Edith Starink; Vol. 17, no. 3:49
Victorian London and the Gothic Revival: Some highlights; K. Corey Keeble; Vol. 17, no. 4:40



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